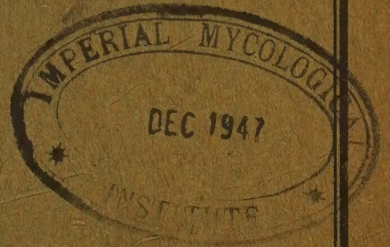


PALESTINE



DEPARTMENT OF AGRICULTURE AND FISHERIES

Annual Report

for the year

1945-46

(Year-ended, March 31, 1946)

Price 50 mils

Published at Jerusalem 1947

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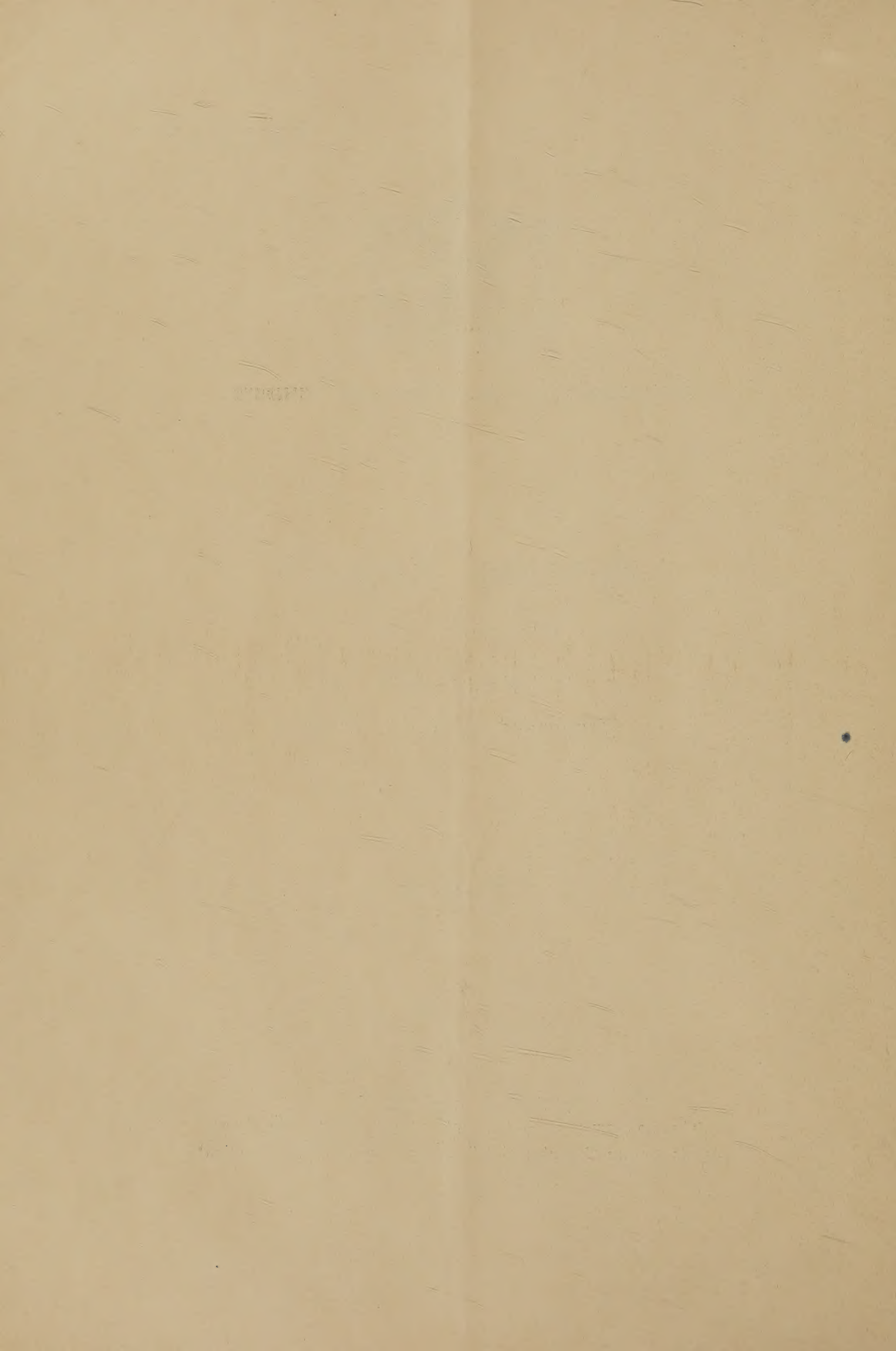


TABLE OF CONTENTS

(The numbers refer to pages)

	<i>Page</i>
INTRODUCTION	4
POLICY	4

SECTION I

AGRICULTURE AND FISHERIES IN PALESTINE, 1945-46

GENERAL SURVEY	5
The Weather	5
MAJOR CROPS AND INDUSTRIES	7
The Citrus Industry	
<i>Areas under Citrus ; Citrus Cultivation ; The Citrus Crop ; Export and Disposal of the Citrus Crop ; Citrus Products ; Shamouti Oranges ; Valencia Oranges ; Grapefruit ; Lemon and other Citrus ; Packing ; Handling and Transport ; Citrus Marketing Board ; Citrus Delegation to the United Kingdom and Continent ; Citrus Control Board ; Government Relief to the Citrus Industry.</i>	
Fruit Inspection Service	13
<i>Inspection of Fruit ; Inspection of Groves ; Survey of Groves infested with Black Scale ; Other Activities ; Citrus Wastage Investigations.</i>	
Wheat	20
<i>The 1944-45 Season ; The 1945-46 Season.</i>	
Barley	21
<i>The 1944-45 Season ; The 1945-46 Season.</i>	
Oats	21
Pulse Crops	21
Summer Crops	22
Forage Crops	22
<i>Berseem mesqawi.</i>	

	<i>Page</i>
Vegetables	23
Potatoes	23
Tobacco... ..	24
Floriculture	24
Fruits other than Citrus	25
<i>Plantings; General Aspects; Olives; Bananas; Grapes;</i>	
<i>Sub-Tropical Fruits; Stone Fruits; Pome Fruits.</i>	
Poultry Husbandry	27
Apiculture	27
Animal Husbandry	28
Fisheries	28
<i>Production; Species; Fishermen; Trawling; Aqaba</i>	
<i>Fisheries; Lake Tiberias; Fish Ponds; Markets and</i>	
<i>Prices.</i>	
AGRICULTURAL MACHINERY AND FERTILIZERS ...	31
Agricultural Machinery	31
Fertilizers	31
(a) <i>Nitrogenous; (b) Phosphatic; (c) Potassic;</i>	
(d) <i>Organic.</i>	
AGRICULTURAL STATISTICS	33

SECTION II

WORK OF THE DEPARTMENT OF AGRICULTURE AND FISHERIES

ESTABLISHMENT	34
Retirement	34
Resignation	34
New Appointments	34
Obituary	34
THE AGRICULTURAL SERVICE	34
Organisation	34
The Government Farm, Acre	35
<i>Production of Planting Material; Experiments and</i>	
<i>Demonstrations; Cereals; Forage and Hay; Pasture</i>	
<i>Investigations; Organic Manures; Vegetables;</i>	
<i>General.</i>	

	<i>Page</i>
District Agricultural Stations	36
Soil Conservation	37
Poultry and Beekeeping	37
THE HORTICULTURAL SERVICE	37
THE PLANT PROTECTION SERVICE.	40
Identifications	40
Research and Investigations	40
<i>Citrus Pests ; Pests of Deciduous Fruit Trees ;</i> <i>Shishtocerca gregaria</i> , Forsk. — <i>The Desert Locust.</i>	
Plant Pathology	42
Extension Work	42
Plant Quarantine	42
THE FISHERIES SERVICE	42
Demonstration Fishing Boat	42
AGRICULTURAL EDUCATION AND PROPAGANDA. ...	43
Kadoorie Agricultural School, Mount Tabor	43
<i>The School Farm ; Animal Husbandry ; Poultry and</i> <i>Beekeeping ; Revenue ; Courses of Instruction.</i>	
Non-Government Agricultural Schools	45
<i>The Salesian Agricultural School ; The Orphelinat</i> <i>Agricole ; The Deir 'Amr Agricultural School ;</i> <i>The Mikveh Israel (Alliance Israelite) Agricultural</i> <i>School ; The Pardess Hanna (Farmers' Association)</i> <i>Secondary Agricultural School.</i>	
School Gardens	46
Propaganda	46

SECTION III

FINANCIAL STATEMENT

Expenditure	46
Revenue	47

SECTION IV

LEGISLATION

Annual Report of the Department of Agriculture and Fisheries for the Year-ended March 31, 1946

INTRODUCTION.

War-time restrictions on the use of paper and the publication of statistics having been removed it is now feasible to publish a more comprehensive report than has been possible during the past six years. The standard arrangement of the report remains the same with the re-introduction of a section showing the expenditure and revenue of the department. The report is therefore divided into four sections : the first section being devoted to a general review of agricultural conditions in the territory; the second dealing with the work of the Department of Agriculture and Fisheries (excluding the Veterinary Service, a report on which is to be published separately); the third being a financial statement; and the fourth dealing with legislation enacted during the year under review. For the first time the report is prefaced by a brief statement of the policy to which the Department is directing its activities.

POLICY.

1. The following is a brief summary of the main items of agricultural policy to which the Department is directing its activities :—

- A. The preservation and improvement of soil fertility by the application of :—
 - (1) soil conservation measures, including stone and broad-base terracing, strip cropping and rational grazing;
 - (2) organic manures, including the full use of farm and town refuse and green manures, and
 - (3) mixed rotational farming, with emphasis on leguminous crops and artificial pastures.
- B. The economic and wise use of the land by :—
 - (1) the growing of better yielding strains of crops and fruits of all kinds;
 - (2) the inclusion in each farming system of a greater variety of crops;
 - (3) the adoption of improved rotational systems best suited to each locality with the inclusion, where possible, of artificial pastures;
 - (4) the growing of permanent crops such as olives, stone fruits and vines in the hills, with rational grazing on other non-afforested hill areas;
 - (5) the keeping of the most suitable high yielding livestock, including poultry and bees, and their proper management;

One Palestine Pound (£P.) = 1,000 mils = One Pound Sterling.

One Dunum (metric) = 1,000 square metres = 0.2471 acre.

Throughout this report the term "Ton" means the metric ton of 1,000 kilogrammes.

(6) the proper use of farming equipment, particularly of tractor-drawn implements.

C. The proper preparation of the produce for the market, particularly in the case of citrus and citrus by-products, olives and olive oil, figs and dates, and cereals. (Work on milk and dairy products has so far been handicapped by the shortage of staff.)

D. The control of plant diseases and pests. (Veterinary work is the subject of a separate report.)

E. The development of marine, fresh-water and pond fisheries.

F. The promotion of agricultural education in conjunction with the Department of Education.

2. The Department has its main experiment station at Acre and subsidiary stations — including seed-multiplication farms, seedling nurseries and stud boxes — at other typical and convenient centres in the territory. Research is also being conducted by the Jewish Agency's Agricultural Research Station at Rehovot and in a smaller way at other Jewish institutions; extensive experimentation in the field is made possible by the very willing co-operation of producers. Agricultural secondary education is provided by Government at the two Kadoorie Agricultural Schools, namely, at Tulkarm for Arabs and at Mt. Tabor for Jews; the former is now under the immediate supervision of the Department of Education which is also directly responsible for agricultural education in other Arab schools.

SECTION I.

AGRICULTURE AND FISHERIES IN PALESTINE, 1945-46.

GENERAL SURVEY.

3. The year under review has, on the whole, been a satisfactory one from the farmer's point of view as it has witnessed the end of hostilities in Europe and the Far East with a consequent improvement in the supply position as regards materials required for agriculture and a slight relaxation of agricultural control.

4. Probably the most influential factor affecting agriculture during the year was the abnormal weather experienced during the months immediately preceding the year under review. Heavy and prolonged rains followed by unseasonable showers in April and May affected the crops in varying degrees; on heavy soils in the north cereal crops were disappointing while on the lighter soils in the south bumper crops of wheat and barley were harvested; the late rains interfered with cultivation and sowing of summer crops with the result that considerable areas were left unsown although soil moisture was adequate; winter-sown vegetables also suffered from water-logging. Citrus fruit suffered damage on the tree as the result of storms and hail with the dropping of fruit in some localities. Livestock benefited as a result of the abnormal rains as natural pasture was excellent throughout the country.

The Weather.

5. Weather conditions prior to the commencement of the year under review were abnormal throughout the country. Heavy rains fell towards the end of

1944 and again during the first quarter of 1945. Although badly distributed, rainfall was well above the average in all districts as is shown in the following table :—

Station	Rainfall 1944/45 Millimetres	Rainfall Normal Annual Millimetres
Acre	701	611
Haifa (Mt. Carmel)	909	652
Safad	1028	900
Nazareth	1036	628
Tiberias	659	452
Beisan	538	305
Nablus	915	632
Tel Aviv	750	509
Jerusalem	769	560
Jericho	294	152
Gaza	660	373
Beersheba	291	220

6. The very heavy rainfall during the first three months of 1945, followed by light showers in April and unseasonal showers in May and June, was a mixed blessing. In the plain of Esdraelon large areas of winter cereals were submerged for several days with disastrous results on yields and in some cases loss of the whole crop; berseem (Egyptian clover) and potatoes also suffered from water-logging. Nevertheless the abundant rainfall resulted in good winter crops generally, and in bumper crops of wheat and barley in the Gaza/Beersheba area where record rainfall figures were reached. There was also an excellent growth of natural pastures, and summer crops had all the requisite soil moisture but in the case of some areas with heavy soils, particularly on mechanised farms, cultivation for summer crops was seriously delayed as the soil was too wet for tractors to work. In other areas weed growth was so rapid that cultivation was impracticable with draught animals. The heavy rains were, of course, responsible for severe soil erosion on over-grazed hills and bare fallows which had not been contour ploughed.

7. The weather during the summer months of 1945 followed its usual course with a few *khamseens* (sirocco winds) in May and June, none of which were of long duration, but the months of July, August and early September were characterised by very hot weather and desiccating winds. The weather became cooler during the latter half of September and there were heavy falls of dew at night.

8. The first part of the 1945/46 rainy season was characterised by mild weather, well distributed showers with sunny intervals. Timely progress was made with ploughing and seeding, and at the end of the year under review prospects for winter crops were most favourable except in the eastern parts of the plain of Esdraelon and the extreme south of the Beersheba sub-district where the rains had not been entirely satisfactory. A cloudburst occurred around

Gaza town in January, 1946, during which over 105 millimetres of rain fell causing considerable damage and some loss of life.

MAJOR CROPS AND INDUSTRIES.

The Citrus Industry.

Area under Citrus.

9. According to statistics obtained in a detailed inspection of all groves which was carried out in the early summer of 1945, a total of 12,333 dunums of citrus were uprooted during 1944 and the first half of 1945, leaving a total area of 263,977 dunums of citrus. Top-working, chiefly of Shamouti oranges and grapefruit, to varieties more in demand for local consumption (Valencia oranges, clementines, etc.) continued during the year under review, but was on a somewhat smaller scale than in 1944. Throughout the war the re-planting of old groves was permitted but the total area recorded as having been renovated in this manner amounts to only 1,882 dunums, the variety chiefly used for re-planting being Valencia. In 1938 the total citrus area was around 293,000 dunums, and it is therefore estimated that about 29,000 dunums were uprooted between 1938 and the early summer of 1945, and 15,000 dunums of the area remaining when the war ended were in an abandoned or neglected condition.

Citrus Cultivation.

10. There was a noticeable increase in grove cultivation during 1945 as compared with previous war years, and the number of applications for controlled materials, such as cement, pipes, motor vehicles, tyres, well boring equipment, pumping engines, materials for packing and pump houses, etc. indicated that improved export prospects had encouraged many growers to begin rehabilitation of their groves. The second table in paragraph 24 summarises the general condition in 1945 of the main bearing citrus area, i.e. excluding abandoned areas and areas recently top-worked or heavily pruned or recently planted. The condition of the leaves, growth, and framework of the trees was taken into consideration as well as the general state of grove cultivation. Cultivation costs were high, averaging about £P.15 per dunum inclusive of the cost of water for a medium standard of cultivation.

The Citrus Crop.

11. The weather was generally very favourable throughout the season until severe storms and hail in mid-February caused considerable damage to the fruit remaining on the trees, and dropping of fruit after these storms was recorded in some localities. In August it was estimated by the Department that the crop on tree totalled some 8,204,000 cases, of which 6,116,000 were Shamouti oranges, 990,000 Valencia oranges, 775,500 grapefruit and 322,500 lemons. It later appeared, however, that this estimate may have been about 10 per cent. below the true figure.

Export and Disposal of the Citrus Crop.

12. The following tabular statement summarises exports during the 1945-46 season (1.6.45-31.5.46) :—

Citrus Fruit	Export (Cases)	Estimated Value F.O.B./F.O.R. £P.
IN CASES.		
Oranges	4,014,165	2,736,000
Grapefruit	832,842	535,000
Lemons and other Citrus	51,826	34,000
TOTAL EXPORT IN CASES. *	4,898,833	3,305,000
IN BULK.		
19,679.399 tons oranges, equivalent to	472,300	187,000
100.545 tons grapefruit, equivalent to	2,815	1,000
289.007 tons lemons and other citrus equivalent to	8,092	3,000
TOTAL EXPORT IN BULK. (20,068.951 tons equivalent to).	483,207	191,000
TOTAL EXPORT IN CASES & IN BULK ** (equivalent to)	5,382,040	3,496,000***

* 1,938,832 cases in 1944-45.

** Excludes exports by the Army during June, 1945, and exports of Citrus medica.

*** Excludes value of containers (cases).

The United Kingdom Ministry of Food took over 54 per cent. of the total cased exports. Export of fruit in bulk was more than one-third less than in the previous year. The following tables, prepared after verification of statistics from all available sources, show the distribution of citrus exports during the 1945-46 season :—

QUANTITY OF CITRUS FRUIT EXPORTED FROM PALESTINE IN CASES.
Season 1945-46 (1.6.45 — 31.5.46).

Country of Destination	Shamouti Oranges	Valancia Oranges	Grape- fruit	Lemons	Others	TOTAL
	Cases	Cases	Cases	Cases	Cases	Cases
British Empire						
United Kingdom	1,623,902	301,235	742,255	—	—	2,667,392
Aden	1,800	1,091	300	—	—	3,191
Eire	127,395	26,221	25,251	7,000	—	185,867
Malta	100,693	5,000	500	—	—	106,193
Sudan	3,084	400	—	—	—	3,484
Other British Possns.	250	3,900	—	—	—	4,150
Continent of Europe						
Belgium	511,585	38,234	1	10,021	—	559,841
Bulgaria	165	808	25	—	—	998
Denmark	106,198	9,188	20,599	29,741	152	165,878
France	541	2,200	—	—	—	2,741
Holland	200,532	667	—	2,000	—	203,199
Norway	24	—	—	—	—	24
Roumania	1,863	3,205	500	1,025	—	6,593
Sweden	490,566	67,272	7,735	—	—	565,573
Switzerland	28,734	3,084	33,200	1,000	—	66,018
Other Countries						
Egypt	11,621	6,953	2,141	481	—	21,196
Hedjaz and Arabia	10,593	800	185	406	—	11,984
Iran	300	—	150	—	—	450
Others	5,751	3,700	—	—	—	9,451
Exports by the Army (x)	273,624	40,986	—	—	—	314,610
TOTAL	3,499,221	514,944	832,842	51,674	152	4,898,833

(x) from 1.7.45 to 31.5.46.

QUANTITY OF CITRUS FRUITS EXPORTED FROM PALESTINE IN BULK.

Season 1945-46 (1.6.45 — 31.5.46).

Country of Destination	Shamouti Oranges	Valencia Oranges	Grape-fruit	Lemons	Others	TOTAL
	Tons	Tons	Tons	Tons	Tons	Tons
Egypt	—	—	6.000	122.000	—	128.000
Syria	371.700	—	90.405	15.000	—	423.105
Trans-Jordan	19,356.799	4.900	4.140	131.660	20.347	19,517.846
TOTAL	19,674.499	4.900	100.545	268.660	20.347	20,068.951

NOTE : In addition to the above, some 2,546 kilogrammes of *Citrus medica* were exported in small boxes to various destinations (including the United Kingdom, U.S.A., Canada, Syria, South Africa and Turkey).

Recorded sales to the citrus products factories amounted to the equivalent of some 660,000 cases, consumption by the civil population is estimated at 2½ million cases, and recorded sales to the Army for local consumption amounted to the equivalent of about 100,000 cases. As such, according to records and estimates of local utilisation and export statistics, the equivalent of 8.4 million cases of citrus was disposed of from the total crop which was estimated to be 8.2 million cases in August but which was later believed to total around 9 million cases.

Citrus Products.

13. Concentrated juice was again the principal product. The United Kingdom allotted a quota of 800 tons of barrelled concentrate of 6 to 1 concentration for beverage manufacture at a price of 19s. per gallon c. & f., but the grapefruit supply position did not permit any definite arrangement for grapefruit concentrate, although 59 tons of 4 to 1 and 5 to 1 concentration, mostly the former, at prices of 13s. and 16s. 3d. respectively, were produced and shipped along with the orange concentrate quota. Additional quantities of 215 tons and 24 tons of orange and grapefruit concentrate were produced and later offered for shipment to the United Kingdom. Largely owing to delayed arrival of equipment, there was only a limited production of sterile orange concentrate; some 33 tons were produced by two factories and exported to the United Kingdom at a price of 21s. per gallon c. & f.; commercial samples were also produced by five other factories. As regards citrus oils, some 11,000 kilogrammes were licensed for export to the United Kingdom at a price of 10s. per lb. f.o.b., of which the majority was exported; miscellaneous exports of orange and lemon oil, mostly the former, to 15 countries of destination, totalled some 8,000 kilogrammes. Deliveries of fruit to factories under the Marketing Scheme totalled some 16,200 tons of Shamouti oranges for concentrated juice manufacture and some 6,100 tons of Shamouti oranges, 3,300 tons of grapefruit and 1,600 tons of lemons for manufacture of other products — mostly pasteurized juice, squash and marmalade; the commercial trial production of canned orange juice is to be recorded.

Shamouti Oranges.

14. About two-thirds of the crop, as originally estimated, was exported and, in addition, apart from local consumption, the recorded uptake by the factories was equivalent to around 550,000 cases. The maturity (sugar/acid ratio, colour and juice content) of the fruit was up to the required standard for export

in many, though not in all, groves by the opening date of the export season. The first consignment to an overseas market (Sweden) was shipped on November 19th, at the request of the buyers; by special permission, the Rule which prohibits the export of Shamouti oranges prior to November 20th — unless the fruit passes a maturity test — was relaxed. The last consignment of the season left Jaffa for the United Kingdom on April 27th. The fruit was packed by counts of 150, 180, 210, 240 or 294 in the standard 74 x 37 x 30 cm. case. Prices F.O.B. varied between 645 mils and 800 mils (excluding case). Bulk exports to neighbouring countries sold for around £P.9.500 mils per ton F.O.R., and the citrus products factories paid £P.5.237 mils per ton for fruit delivered under the Citrus Marketing Scheme. Crops were sold “on the tree” at between 100 and 150 mils per case, and the fruit fetched from 50 to 150 mils per hundred in local markets during the export season.

Valencia Oranges.

15. About half the crop, as originally estimated, was exported to the United Kingdom and European countries, whilst the Army purchases, local requirements and exports to neighbouring countries accounted for most of the balance. Unfortunately severe hail storms caused much damage and disfigurement to the crop even before picking started. The first export consignment left on February 22nd and exports continued until after the end of May. The fruit was packed by counts of 150, 180, 210, 240 or 294 (chiefly the two latter) in the standard 74 x 37 x 30 cm. case and prices F.O.B. varied between 650 mils and 800 mils (excluding case). No bulk exports or sales to factories were recorded. Crops were sold “on the tree” at between 300 and 350 mils per case and the fruit was offered in local markets at 100 to 150 mils per 100 during the export season and at 300 to 800 mils per 100 later from store.

Grapefruit.

16. All exportable fruit was disposed of. The first consignment was shipped to the United Kingdom (from Haifa) on November 6th, and the last of the season left Tel Aviv on May 5th. The fruit was at first packed by counts of 80, 96, 112 and 120 but it was soon found that the 120 count was impracticable and all fruit was then packed by counts of 80, 96, 112, 126 and 150. The 74 x 37 x 30 cm. case was used throughout. Prices F.O.B. were around 632-800 mils (excluding case), the factories paid £P.6.665 mils per ton for fruit delivered under the Citrus Marketing Scheme, crops were sold “on the tree” at between 150 and 200 mils per case, and the fruit fetched from 100 to 150 mils per hundred in local markets during the export season and later up to 600 mils per 100 from store.

Lemons and other Citrus.

17. Less than 20 per cent. of the estimated lemon crop was exported and although local consumption was considerable a substantial proportion of the winter and spring crop was not utilised. The first shipment was made on November 25th and small consignments, chiefly to Denmark and Belgium, were shipped until March. The small 68 x 34 x 28 cm. case was used almost exclusively, packed by counts of 210, 240, 270, 300, 330 and 360, but “orange” counts in the 74 cm. case were also permitted — as were the counts 150 and 390 in the 68 x 34 x 28 cm. case. Export prices (F.O.B., excluding case) ranged from 650 mils to 750 mils per case. Prices in local markets were very variable, ranging from 150 mils to as much as 400 mils per 100. The only other citrus fruits exported were small consignments of *Citrus medica* and pomeloos.

Packing, Handling and Transport.

18. Temporary shortages of packing material occurred throughout the season and were partially met by the use of locally grown timber and hoops. As a result, frail and unsuitable cases had to be used at times and these caused some damage to the fruit when stacked and handled. In general, insufficient care was taken in handling the fruit from tree to ship's hold and this resulted in an undue amount of mechanically damaged fruit and consequent wastage. Heavy wastage in fruit awaiting export occurred on five occasions due to storms, delay in arrival of vessels, slow loading, congestion of the transit sheds and other factors. The opening of the Jaffa Port (Northern and Southern sections) relieved to some extent the congestion which prevailed at Haifa owing to heavy imports. 79 per cent. of the total citrus exports by sea were from Haifa Port, 12 per cent. from Jaffa Port (Southern section) and 9 per cent. from the Northern section (Tel Aviv). Shortage of shed space at Haifa and at Lydda Railway Station hampered rapid handling. Many of the ships made available did not possess adequate ventilation, suitable hold design, sufficient speed, etc.

Citrus Marketing Board.

19. The Board operated a Marketing Scheme similar to that in force in the previous season and with only minor modifications. Other major activities of the Board included the organisation of bulk purchases of packing materials, negotiations on behalf of the industry with individuals, trade associations and Government Departments in Palestine and abroad, and the issue of citrus export licences. Out of a total of 5.66 million cases of citrus (or their equivalent in bulk fruit) delivered under the Citrus Marketing Scheme during the season (up to 31.5.46) some 12 per cent. went to the factories, $7\frac{1}{2}$ per cent. to the Army and the remaining $80\frac{1}{2}$ per cent. was sold to overseas purchasers. The majority of the contracts stipulated payment on delivery F.O.B., but during April and early May certain cargoes to the United Kingdom and Sweden were shipped with the stipulation that loss due to wastage exceeding 10 per cent. (as determined on out-turn at port of arrival) would be borne by the twenty-four contracting groups of exporters in proportion to the number of cases shipped by each group on the vessel concerned. Representatives of the Board were present when these particular vessels discharged their cargoes. It was unfortunately not possible to arrange for the consignments by each registered exporter, or even by each of the contracting groups, to be separately inspected for wastage and quality at the port of discharge — the result being that the net return to each exporter was related to the general condition of the cargo and not, as is very desirable, to the condition of the fruit actually consigned by him.

Citrus Delegation to the United Kingdom and Continent.

20. At a joint meeting of the Citrus Control and Marketing Boards, it was decided to recommend to Government that a delegation of six persons should proceed to the United Kingdom and the Continent with terms of reference which included the following :— To negotiate the sale of citrus to the United Kingdom Ministry of Food and European countries, the purchase of packing materials and the provision of shipping; to discuss with the Secretary of State and others the repayment to Government of citrus cultivation advances, financial problems relating to the rehabilitation and improvement of the industry and import duties on citrus; to negotiate the repayment of outstanding pre-war debts to the industry; to investigate the possibility of co-ordinated

marketing by the Palestine and South African citrus industries, and other business matters (such as advertising) which concern the Palestine citrus industry. Government approved the choice of members and the terms of reference for the Delegation which left Palestine during the first week of September. The Delegation was well received, negotiated the sale of some four million cases of citrus and arranged for the supply of sufficient boxwood for that quantity. Much useful progress was made in connection with the other matters included in the terms of reference, and the Delegation reported to Government and the Citrus Control and Marketing Boards after the members returned to Palestine early in November.

Citrus Control Board.

21. The Citrus Control Board dealt with many major problems of the industry during the year, including citrus cultivation advances, the consolidation of the growers' debt to Government, rehabilitation of the groves, the provision of packing materials and equipment for the industry, the general principles of the Marketing Scheme, the Citrus Delegation to the United Kingdom and European countries, the supply of fertilizers, citrus wastage investigations, and the control of black scale, silver rust mite, *Pseudococcus comstocki* and other pests. Other problems considered included the control of new plantings of citrus, the dates for the opening of the Shamouti orange and the lemon export seasons, customs duties on calcium citrate, etc. On technical matters the Board was advised by a Technical Committee whose terms of reference were extended during the year to include the study of the control of citrus pests and diseases in general — formerly this Committee was concerned only with the control of black scale. The Chief Horticultural Officer continued to act as Manager of the Board, pending the appointment of a full-time Manager for the Control and Marketing Boards.

Government Relief to the Citrus Industry.

22. A further sum of £P. 650,000 was provided for the payment of citrus cultivation advances, which were made at the rate of £P. 5 per dunum for up to the first 20 dunums of each eligible grove, and of £P. 4 for areas in excess of the first 20 dunums. Only those citrus areas in respect of which advances were made in 1944, of which the ownership had not changed hands, and which received not less than 6 points for conditions during the 1945 citrus grove inspection, were eligible for advances. Areas where the bearing capacity was temporarily reduced owing to cultural operations (such as heavy pruning, top-working, and re-planting), but which were otherwise eligible, received advances at lower rates. The total of war-time and post-war citrus cultivation advances issued to growers, including the 1945 advances, was approximately £P. 3,690,000. An outright grant of £P. 150,000 to be spread over three years was made by Government towards the cost of black scale control by spraying or fumigation. The Citrus Control Board and the Department of Agriculture formulated a scheme for the use of this grant, and during the year under review some £P. 25,000 was paid out in respect of half the cost of treating some 9,000 dunums. The purchase of packing materials on behalf of the Citrus Marketing Board was again financed by Government, which also bore the entire cost of the Fruit Inspection Service. No Rural Property Tax was levied on citrus groves. It is understood that railway freight charges for citrus consigned to Haifa covered operating costs only from Ras el Ein northwards.

Fruit Inspection Service.

Inspection of Fruit.

23. Inspection of cased citrus fruit for export was carried out at eleven railway stations and at the ports. Mainly owing to mechanical damage, bad selection and careless packing, the general quality of much of the fruit presented for inspection was not up to the desired standard; there is no doubt that the absence of any real financial incentive for individual exporters to pack good quality fruit was largely responsible. Shortage of suitable packing houses and the effect of war-time neglect upon the incidence and degree of infestation by pests and diseases contributed to the rather low standard of fruit quality. 222,338 cases (4.9 per cent. of the number submitted for inspection) were rejected, and of these 189,346 cases were repacked under the supervision of Fruit Inspectors and the equivalent of 32,992 cases of fruit had to be discarded as totally unfit for export. It was observed that wraps impregnated with diphenyl were very effective in reducing wastage caused by blue and green moulds in fruit awaiting export; a large proportion of the wastage occurring was primarily due to mechanical injuries, infection in the grove with *Diplodia* rot, bruising, "nuksan" or hail damage. The main causes for rejection during the season under review are shown in the following table :—

MAIN CAUSES FOR THE REJECTION OF FRUIT FOR EXPORT.

(Expressed as percentages of the total rejections each month).

Cause of rejection	Oct. 1945 %	Nov. 1945 %	Dec. 1945 %	Jan. 1946 %	Feb. 1946 %	Mar. 1946 %	April 1946 %	May 1946 %
Mechanical injuries.	3.—	6.2	20.—	23.8	30.4	21.4	17.4	37.—
Waste (fungal rots).	—	0.3	1.7	19.8	35.2	43.2	48.1	32.6
Nuksan.	—	2.0	7.7	9.7	6.—	4.2	3.1	0.1
Bruised fruit.	20.—	39.3	22.—	2.6	0.1	—	—	—
Hail damage.	—	—	0.3	—	5.3	18.9	20.—	18.—
Improperly cut fruit.	—	1.3	1.7	6.2	6.1	2.9	4.7	0.1
Rough skin.	4.—	5.3	9.—	7.1	1.2	0.2	0.8	—
Irregular sizing.	—	14.5	5.6	1.8	0.9	0.2	0.2	0.2
Fumagine.	—	—	2.5	3.—	5.9	1.7	0.9	—
Mediterranean Fruit Fly.	—	0.6	6.—	3.—	0.7	0.6	0.3	—
Red Scale.	21.—	8.6	7.7	8.2	0.7	0.9	0.2	—
Mussel Scale.	—	1.7	3.—	1.4	1.7	1.5	0.3	—
Black Scale.	—	7.7	6.5	7.3	2.—	0.3	0.4	0.4
Rust Mite and thrips.	3.—	0.5	0.4	—	—	—	—	—
Rind moth.	—	—	0.2	0.1	0.5	—	—	—
Other causes.	49.—	12.—	5.7	6.—	3.3	4.—	3.6	11.6

Very useful and informative Cargo Inspection Reports on the condition on arrival of shipments to the United Kingdom were supplied by the local Representative of the British Ministry of Food and the following table summarises these Reports :—

SUMMARY OF CARGO INSPECTION REPORTS ON CITRUS SHIPMENTS TO THE
UNITED KINGDOM DURING THE 1945-46 SEASON.

Month of Shipment & Variety of Citrus.	Number of Shipments	Average duration of voyage in days	Percentage (of Cases landed) in Condition Categories. (x)			
			1st, 2nd & 3rd.	4th	5th	6th, 7th and 8th.
			%	%	%	%
NOVEMBER.						
Grapefruit	3	13	100	—	—	—
Shamouti	5	13.4	93	6.7	0.3	—
DECEMBER.						
Grapefruit	6	14.8	100	—	—	—
Shamouti	14	15.1	62.3	27	8.9	1.8
JANUARY.						
Grapefruit	6	14.5	96.9	2.2	0.8	0.1
Shamouti	11	13.4	76	18	5.8	0.2
FEBRUARY.						
Grapefruit	6	15.6	95	4.4	0.5	0.1
Shamouti	1	18	86.9	12.2	0.6	0.3
MARCH.						
Grapefruit	2	17.5	99	0.7	0.3	—
Valencia	4	18	94.2	4.9	0.7	0.2
APRIL.						
Grapefruit	1	14	30.6	51.5	17	0.9
Shamouti	1	14	16.4	39	37.8	6.8
MAY.						
Grapefruit	1	11	29.5	57.8	9.8	2.9

(X) Note: Condition categories: "1st, 2nd and 3rd" include cases showing no wastage and also those showing up to 10% wastage. "4th" includes cases showing from 10% to 25% wastage. "5th" includes cases showing from 25% to 50% wastage. "6th, 7th and 8th" include cases showing from 50% to 100% wastage.

Inspection of Groves.

24. During May, June and July the regular staff of the Fruit Inspection Service, together with some 30 temporary grove inspectors, carried out a detailed inspection of all groves, the methods of inspection and of point judging being essentially the same as in previous years. The following five tables, which were compiled by the Service from the information recorded during the grove inspection, are self-explanatory and cover the main aspects of the industry, viz: the areas under different varieties, the condition and size of groves and the packing house situation. The detailed information upon which the table on grove condition is based was used by the Citrus Control Board and the Citrus Marketing Board in connection with the grant of citrus cultivation advances and with the operation of the Citrus Marketing Scheme, as well as by the Fruit Inspection Service in the preparation of the crop estimate.

AREAS PLANTED WITH CITRUS.

Arab and other Non-Jewish owned areas — in Dunums.

	<i>Shamouti</i>	<i>Valencia</i>	<i>Grapefruit</i>	<i>Lemons</i>	<i>Others</i>	<i>Total</i>
(1)	103,148	11,179	2,225	4,181	3,502	124,235
(2)	2,534	78	22	46	19	2,699
(3)	2,309	21	6	35	10	2,381
(4)	1,063	33	190	127	6	1,421
(5)	17	534	—	24	280	855
(6)	109	445	—	3	296	853
(7)	247	—	—	—	3	250
(8)	685	40	2	9	1	737
(9)	141	560	—	15	185	901
(10)	—	—	—	—	661	661
Total.	110,255	12,890	2,445	4,440	4,963	134,993

Jewish owned areas — in Dunums.

	<i>Shamouti</i>	<i>Valencia</i>	<i>Grapefruit</i>	<i>Lemons</i>	<i>Others</i>	<i>Total</i>
(1)	84,217	12,103	11,994	3,829	2,430	114,573
(2)	1,986	207	243	58	39	2,533
(3)	6,670	252	607	57	127	7,713
(4)	129	8	232	—	14	383
(5)	105	542	18	12	97	774
(6)	6	276	3	29	98	412
(7)	932	5	200	2	3	1,142
(8)	832	39	243	15	5	1,134
(9)	5	119	—	4	66	194
(10)	—	—	—	—	126	126
Total.	94,882	13,551	13,540	4,006	3,005	128,984

Total areas — in Dunums.

	<i>Shamouti</i>	<i>Valencia</i>	<i>Grapefruit</i>	<i>Lemons</i>	<i>Others</i>	<i>Total</i>
(1)	187,365	23,283	14,219	8,010	5,932	238,808
(2)	4,520	285	265	104	58	5,232
(3)	8,979	273	613	92	137	10,094
(4)	1,194	41	422	127	20	1,804
(5)	122	1,076	18	36	377	1,629
(6)	115	721	3	32	394	1,265
(7)	1,179	5	200	2	6	1,392
(8)	1,517	79	245	24	6	1,871
(9)	146	679	—	19	251	1,095
(10)	—	—	—	—	787	787
Total.	205,137	26,441	15,985	8,446	7,968	263,977

Note: (1) Not included in (2) to (10).

(2) Neglected.

(3) Abandoned.

(4) Prepared for top-working to another variety.

(5) Top-worked in 1942 or 1943 (new scion variety).

(6) Top-worked in 1944 or 1945 (new scion variety).

(7) Heavily pruned in 1942 or 1943.

(8) Heavily pruned in 1944 or 1945.

(9) Replanted since 1939.

(10) Recently replanted with rootstocks.

CONDITION OF CITRUS GROVES.

Area of Citrus (in Dunums) Judged for Condition (See Note below).

Condition Category	Shamouti	Valencia	Grapefruit	Lemons	Others	Total
"A"	9,692	1,265	630	260	455	12,302
"B"	29,383	3,183	2,652	871	1,124	37,213
"C"	154,256	20,878	11,419	7,038	5,168	198,759
	193,331	25,326	14,701	8,169	6,747	248,274

N o t e

Condition Category "A" : Given less than 6 points out of a possible maximum of 15.
 " " "B" : Given from 6 to 7½ points out of a possible maximum of 15,
 " " "C" : Given 7¾ points or more out of a possible maximum of 15.

SIZE OF GROVES.

Size Group	Number of Groves			Area of Groves — in dunams		
	Owned by Arabs & Other Non-Jews	Jewish owned	TOTAL	Owned by Arabs & Other Non-Jews	Jewish owned	TOTAL
"I"	611	949	1,560	1,915	2,958	4,873
"II"	965	1,842	2,807	6,911	14,299	21,210
"III"	1,217	1,789	3,006	17,721	25,569	43,290
"IV"	1,223	1,221	2,444	38,439	36,769	75,208
"V"	513	330	843	36,144	23,808	59,952
"VI"	204	143	347	33,863	25,581	59,444
	4,733	6,274	11,007	134,993	128,984	263,977

N o t e

Size Group "I" includes groves with a total citrus area of under 5 dunams.
 " " "II" " " " " " " " " " " " " " 5 dunams
 or over but under 10 dunams.
 " " "III" " " " " " " " " " " " " " with a total citrus area of 10 dunams
 or over but under 20 dunams.
 " " "IV" " " " " " " " " " " " " " with a total citrus area of 20 dunams
 or over but under 50 dunams.
 " " "V" " " " " " " " " " " " " " with a total citrus area of 50 dunams
 or over but under 100 dunams.
 " " "IV" " " " " " " " " " " " " " with a total citrus area of 100 dunams or over.

NUMBER AND TYPES OF PACKING HOUSES.

In Groves owned by Arabs and other Non-Jews.

Type of Packing House		Number of Packing Houses in "Grove Size Group" (See "Size of Groves" Table)						
Structure	Floor	"I"	"II"	"III"	"IV"	"V"	"VI"	TOTAL
Good	Earth	—	2	2	6	8	23	41
Good	Concrete	—	1	2	16	13	26	58
Good	Wood	—	—	—	—	1	—	1
Fair	Earth	3	9	18	79	68	49	226
Fair	Concrete	—	2	13	21	30	21	87
Fair	Wood	—	—	—	—	—	3	3
Poor	Earth	2	2	6	18	43	21	92
Poor	Concrete	—	—	3	4	2	—	9
Poor	Wood	—	—	—	—	3	1	4
TOTAL		5	16	44	144	168	144	521

In Groves owned by Jews.

Type of Packing House		Number of Packing Houses in "Grove Size Group" (See "Size of Groves" Table)						
Structure	Floor	"I"	"II"	"III"	"IV"	"V"	"VI"	TOTAL
Good	Earth	9	44	84	83	29	11	260
Good	Concrete	11	35	98	137	72	45	398
Good	Wood	—	5	25	37	37	21	125
Fair	Earth	10	48	84	130	41	16	329
Fair	Concrete	1	5	7	13	9	5	40
Fair	Wood	2	24	18	30	16	13	103
Poor	Earth	1	17	26	34	14	6	98
Poor	Concrete	1	5	9	7	6	—	28
Poor	Wood	1	2	3	6	5	3	20
TOTAL		36	185	354	477	229	120	1,401

In All Groves.

Type of Packing House		Number of Packing Houses in "Grove Size Group" (See "Size of Groves" Table)						
Structure	Floor	"I"	"II"	"III"	"IV"	"V"	"VI"	TOTAL
Good	Earth	9	46	86	89	37	34	301
Good	Concrete	11	36	100	153	85	71	456
Good	Wood	—	5	25	37	38	21	126
Fair	Earth	13	57	102	209	109	65	555
Fair	Concrete	1	7	20	34	39	26	127
Fair	Wood	2	24	18	30	16	16	106
Poor	Earth	3	19	32	52	57	27	190
Poor	Concrete	1	5	12	11	8	—	37
Poor	Wood	1	2	3	6	8	4	24
TOTAL		41	201	398	621	397	264	1,922

FLOOR AREAS OF DIFFERENT TYPES OF PACKING HOUSES.

In Groves owned by Arabs and other Non-Jews.

Type of packing House		Floor Area of Packing Houses (in Sq. Metres) in "Grove Size Group" (See "Size of Groves" Table)						
Structure	Floor	"I"	"II"	"III"	"IV"	"V"	"VI"	TOTAL
Good	Earth	—	228	243	757	672	5,021	6,921
Good	Concrete	—	119	152	1,186	1,561	4,081	7,099
Good	Wood	—	—	—	—	210	—	210
Fair	Earth	249	523	1,392	7,153	6,583	6,594	22,494
Fair	Concrete	—	96	732	1,726	2,820	2,402	7,776
Fair	Wood	—	—	—	—	—	300	300
Poor	Earth	58	100	263	1,396	3,511	2,322	7,650
Poor	Concrete	—	—	406	565	361	—	1,332
Poor	Wood	—	—	—	—	288	102	390
TOTAL		307	1,066	3,188	12,783	16,006	20,822	54,172

In Groves owned by Jews.

Type of Packing House		Floor Area of Packing Houses (in Sq. Metres) in "Grove Size Group" (See "Size of Groves" Table)						
Structure	Floor	"I"	"II"	"III"	"IV"	"V"	"VI"	TOTAL
Good	Earth	114	1,542	5,971	12,075	6,049	4,735	30,486
Good	Concrete	180	1,889	6,283	18,250	12,040	14,166	52,808
Good	Wood	—	364	2,291	4,004	6,597	4,286	17,542
Fair	Earth	684	3,195	6,562	15,113	4,937	3,059	33,550
Fair	Concrete	64	426	387	1,579	1,070	1,008	4,534
Fair	Wood	80	1,522	1,401	2,925	1,697	1,617	9,242
Poor	Earth	40	985	1,706	4,071	1,703	430	8,935
Poor	Concrete	20	382	569	779	268	—	2,018
Poor	Wood	42	189	320	803	720	306	2,380
TOTAL		1,224	10,494	25,490	59,599	35,081	29,607	161,495

In All Groves.

Type of Packing House		Floor Area of Packing Houses (in Sq. Metres) in "Grove Size Group" (See "Size of Groves" Table)						
Structure	Floor	"I"	"II"	"III"	"IV"	"V"	"VI"	TOTAL
Good	Earth	114	1,770	6,214	12,832	6,721	9,756	37,407
Good	Concrete	180	2,008	6,435	19,436	13,601	18,247	59,907
Good	Wood	—	364	2,291	4,004	6,807	4,286	17,752
Fair	Earth	933	3,718	7,954	22,266	11,520	9,653	56,044
Fair	Concrete	64	522	1,119	3,305	3,890	3,410	12,310
Fair	Wood	80	1,522	1,401	2,925	1,697	1,917	9,542
Poor	Earth	98	1,085	1,969	5,467	5,214	2,752	16,585
Poor	Concrete	20	382	975	1,344	629	—	3,350
Poor	Wood	42	189	320	803	1,008	408	2,770
TOTAL		1,531	11,560	28,678	72,382	51,087	50,429	215,667

Survey of Groves infested with Black Scale.

25. A survey of all citrus groves infested with black scale was undertaken simultaneously with the general inspection of groves. This survey was planned in consultation with the Chief Plant Protection Officer and the technical officers of the commercial firms concerned with fumigating and spraying. Some 18,000 dunums of citrus were found to be heavily infested with black scale, 12,000 dunums infested to a medium extent and 30,000 dunums lightly infested. Thus a total of some 60,000 dunums, located in 91 village areas scattered throughout the whole citrus growing area of the country north of Isdud, were more or less infested in the early summer of 1945, as compared with a total of less than 21,000 dunums definitely known to be infested in the spring of 1943.

Other Activities.

26. In August a crop estimate was carried out by the Service along the same lines as in the previous year. Maturity tests on some 200 samples of oranges and grapefruit were made during the season. Miscellaneous inspections included 892 visits in connection with the release of controlled materials and 49 relating to the estimation of damages. Some 50 grove inspections were made in connection with loan appeals, new registrations and the control of new plantings of citrus. The revision of the general survey of citrus groves continued when other work was not pressing, 8,215 dunums in 10 village areas being surveyed during the year. Towards the end of the export season, the Mukhtars or Agricultural Committees of some 58 villages (from which fruit infested, or suspected to be infested, with silver rust mite had been submitted for inspection) were visited by Inspectors who confirmed that there were infested groves in 33 village areas, the area of citrus involved being over 8,000 dunums.

Citrus Wastage Investigations.

27. Investigations into the causes and control of citrus fruit wastage were continued in 1945-46 at the Jewish Agency Agricultural Research Station, Rehovot. The work was principally a continuation of study of the items of research included in the 1944-45 year, namely, use of disinfectants, control of *Diplodia* rot in the groves, brown rot control, survey of diseases present in groves and storage problems. Arrangements for this work were again made by the Citrus Control Board. In addition to the above programme, preliminary local trials were conducted of a process for the disinfection of packed fruit by nitrogen trichloride gas. In conjunction with the Department of Scientific and Industrial Research, London, the Agricultural Research Station also carried out shipping and laboratory trials of a proprietary method for the control of wastage by means of "wafers" inserted between layers of packed fruit. At the request of the Citrus Marketing Board, the Fruit Inspection Service (in conjunction with the Department of Scientific and Industrial Research) carried out controlled shipping trials on a commercial scale of Shamouti oranges packed in wraps impregnated with 40 milligrammes of diphenyl per 100 square inches of wrap. The British Ministry of Food, and their local representative in Jaffa, gave great assistance in the carrying out of the two series of shipping trials mentioned above. It was reported that the diphenyl wraps reduced wastage from *Penicillium* sp. by about 80 per cent. but had a lesser effect on control of brown stem-end rot (*Diplodia* sp.) with a maximum reduction of only about 50 per cent. These controlled commercial trials proved the great value of diphenyl wraps, particularly for use with mid- and end-season shipments when wastage tends to be heavy, though

in end-season shipments when stem-end rot increases the control would not be so effective. It was also reported that the use of diphenyl wraps did not affect the quality of the fruit to any marked extent. The "wafers", whilst affording some control of wastage, did not appear to be sufficiently effective for use where there is a tendency for heavy wastage to develop.

Wheat.

The 1944-45 Season.

28. As a result of the adverse weather conditions experienced during the first quarter of 1945, wheat production on the heavy soils was disappointing, due to late sowing and subsequent water-logging. 'Afir-sown (before the first rains) crops grew well but were later attacked by rust. On the lighter soils, particularly in the Gaza/Beersheba area, the crop was excellent and yields were well above the average. Final results, however, for the country as a whole were above average and led to a considerable fall in prices during the summer months.

The total area under wheat during the season under review was estimated to be 1,378,500* dunums as compared with 1,450,600* dunums in the previous season. Wheat yields were estimated to be 58,355* tons as against 57,456* tons in the 1943/44 season.

It was reported from Galilee that, contrary to experience in previous years, local wheat varieties gave better yields than imported varieties in many localities. This was especially the case on heavy wet soils where *Nursi* variety showed its superiority over all other varieties.

The 1945-46 Season.

29. In contrast to the previous season weather conditions were very favourable for winter crops. The rains commenced in November and were well distributed during the first two months as a result of which there was no delay in cultivation and sowing. It was estimated that rather more land than usual was sown "*afir*" (before the first rains). Rainfall was sparse in January and caused some anxiety in eastern Galilee and around Beersheba. Adequate rains in February and March made up for this and by the end of the period under review prospects were generally good except in the hill areas where cereals were very backward.

It has been encouraging to note the extended use of improved and selected varieties of wheat. On many of the Jewish farms almost all fields were sown with one of the standard varieties — C.C.C. (an Australian introduction), Florence and Nursi; in many cases an increase of 40 — 50 per cent. was obtained by the use of one or other of these varieties. The use of improved varieties by Arab farmers is gradually becoming more popular but it is difficult to ensure that subsequent seed is kept pure when it reaches the village threshing floor.

The estimated area sown to wheat during the 1945-46 season was 1,568,500 dunums.

* These figures must be treated with reserve; there has no doubt been some under-estimation on account of compulsory distribution schemes.

Barley.

The 1944-45 Season.

30. The barley crop generally suffered much less from the inclement weather conditions than did the wheat crop. The reason for this being that the main barley growing area is in the south where the rainfall, although unprecedented, was not too heavy and was widespread. The Beersheba cultivators enjoyed one of the best crops they have experienced for many years. The crop, both in quantity and quality, was also excellent in the Beisan and Jordan valleys.

31. The estimated area planted during the season under review was 1,575,900* dunums compared with 1,414,000* dunums in 1943-44. The yield was estimated at 74,906* tons as against 41,482* tons for the previous seasons.

The 1945-46 Season.

32. The adequate and well distributed rainfall favoured the barley crop on the coastal plain and in the north but the dry spell in January affected yields in many localities particularly in eastern Galilee. The normal inadequate rainfall in the southern part of the Gaza district resulted in large areas not being sown and the yields in the Beersheba area generally were expected to be poor. A bumper crop was expected in the Lydda district.

33. As in the case of wheat, selected and improved varieties were becoming more popular and many farmers sowed nothing but B.M.C., M.37 or M.38 (Acre selections).

34. The estimated area sown to barley during the 1945-46 season was 1,537,700 dunums.

Oats.

35. Oats, as a grain crop, are not grown on any large scale. Oats are mainly sown with vetch as a hay crop, or to cut green for fodder. The area under this crop for grain is, however, gradually increasing and yields in the 1945-46 season were most promising despite the effects of rust. Only slight attacks by *ed-dudeh* (a leaf miner — *Syringopais temperatella*) and field mice were recorded.

Pulse Crops.

36. The main pulse crops grown are lentils, *kersanneh*, (*Vicia ervilia*), *jilbaneh* (*Vicia* sp.), lupins, peas, beans, and chick peas (*Cicer arietinum*). Lupins are grown mostly as a green manure.

37. There was a general increase in the area planted with pulse crops partly due to high prices but also, it is believed, to a better realisation of their value in a rotation. The heavy rains experienced in the 1944-45 season did not produce yields much above the average. *Ful* (horse beans) were, as usual, heavily attacked by rust. Lentils in the Gaza area also suffered from rust.

38. Pulse crops sown during the 1945-46 season were developing satisfactorily at the close of the period under review and fair to average yields were expected.

* These figures are to be treated with reserve; there has no doubt been some under-estimation on account of compulsory distribution schemes.

Summer Crops.

39. The main summer crops, which hardly ever receive a drop of rain, depending on moisture conserved in the soil from the winter rains for their growth, are *dura* (millet), sesame, maize, melons and water melons.

40. Although the exceptionally heavy rainfall at the end of 1944 and the beginning of 1945 provided an adequate reserve of soil moisture for summer crops, production was not as high as might have been expected except in the Gaza district. In all other localities to the north, cultivation and sowing were delayed owing to the inability of farmers to touch the soil. In some cases weeds grew so rapidly that, by the time the soil was fit to cultivate, the ordinary animal-drawn implement was quite unable to cope with them and thus considerable areas were left unsown. In most districts, however, the reduced area sown was offset by exceptionally high yields obtained elsewhere.

41. Sesame and melons were more favoured. There was a general increase in area and yield in the case of sesame. Melon cultivation showed an increase in area and production while water melon production was almost doubled. Prices of water melons were low owing to the prohibition of export, a war-time measure to encourage the planting of summer crops with a better food value.

42. Preparations for the 1946 season were being carried out under ideal conditions and there should be a further increase in planted areas in 1946.

Forage Crops.

43. The area under rain-grown fodder crops — berseem (Egyptian clover), oats and vetch, lucerne — was smaller than usual owing to scarcity of seed and also to difficulties encountered in cultivation and sowing as a result of the heavy and persistent rainfall which delayed agricultural operations generally. The smaller area sown was, however, offset by increased yields and by considerable areas of cereals which had become overgrown with weeds and were cut for hay. Growth of natural herbage, particularly leguminous species, was so luxuriant that much larger areas than usual were cut, dried and baled as hay. Although fears were expressed early in the season that there would be a shortage of hay as a result of inclement weather conditions, there were, in the end, ample supplies to meet the needs of the country. Prices of hay dropped in one district from £P. 27 per ton to £P. 18-19.

44. Good results were obtained on Jewish settlements, as a result of a long series of trials, with a new seeds mixture consisting of purple vetch (*Vicia atro-purpurea*) — 5—6 kilogrammes and oats — 1—1½ kilogrammes per dunum; yields of from 600—700 kilogrammes of hay per dunum were obtained.

45. *Berseem mesquawi* (Egyptian multiple-cut clover) which was once the most popular fodder crop in Palestine has fallen into disrepute. Root disease and other fungous diseases have become fairly widespread with a decline in yields; in many cases only four cuts being obtained instead of from 6—7 cuts.

46. Summer fodder crops such as maize, *pencillaria* (pearl millet) and cowpeas were planted on a large scale and gave very satisfactory yields. The newly introduced "Wintersome" (*Andropogon sorghum*) gave very high yields (10—12 tons per dunum) and is becoming one of the main fodder crops on Jewish settlements for late summer feeding.

47. Natural pasture was excellent, leguminous plants showing to advantage, and livestock enjoyed the best grazing for many years. There has been an increase in artificial pastures (irrigated) laid down in Jewish settlements as a direct result of success obtained at the Government Farm, Acre; lucerne, Rhodes grass, *Paspalum* and Sudan grass being the "seeds" used. The extended use of artificial pastures is encouraging as it is one method of reducing the present high costs of milk production on dairy farms.

48. Mangolds, a crop confined to Jewish settlements, are becoming more popular and gave very good yields during the season under review.

49. The prolonged wet weather precluded the sowing of winter crops for silage and very little was made from this source but large quantities were made from maize which is a summer crop.

Vegetables.

50. Encouraged by high prices both Arab and Jewish farmers have expanded this branch of farming and substantial progress has been made towards increasing and improving the growing of vegetables under irrigation. Further and rapid development of vegetable growing is anticipated as and when increased supplies of irrigation equipment become available and the local seed production industry becomes more efficient and modernised.

51. The distribution by this department, at nominal rates, of large quantities of vegetable seedlings amongst farmers, smallholders and urban gardeners was continued. It is certain that this policy has greatly contributed during the war years to increased vegetable production.

52. As in the case of most other crops the 1944-45 autumn and winter sown vegetables suffered from excessive rains, many fields becoming overgrown with weeds before cultivation was possible. Spring sown vegetables were, however, planted on a larger scale than usual; supplies were therefore plentiful and prices dropped appreciably during the summer but in the larger towns the consumer did not benefit as much as he should have done. Vegetables planted during the autumn and winter of the year under review showed satisfactory growth — prices were good.

53. Tomato cultivation is increasing in popularity; considerable areas are planted as a field crop at the end of the rainy season and in certain areas give high yields without further rain or irrigation. Fair quantities of tomatoes were supplied to canning factories during the glut season at from £P. 5 — 6 per ton.

54. A number of new varieties of vegetables have been introduced, particularly early and late varieties, with the object of prolonging the season. The number of cold stores in Jewish settlements has increased and considerable quantities of vegetables are now stored during a glut for marketing when supplies are short. Cucurbitaceous vegetables did particularly well in the south.

55. Areas and yields of the important vegetable crops will be found on page 33 of this report under "Agricultural Statistics".

Potatoes.

56. The growing of potatoes continues to be one of the most important branches of intensive farming in Palestine. The winter-sown area under this crop was very much reduced and growth adversely affected owing to late rains

and cold weather during the first quarter of 1945. The summer plantings were more successful but local demands for seed potatoes could not be met owing to the delay and reduction in the import of seed potatoes which was only 2,500 tons compared with 5,000 tons for the 1944/45 season.

57. The total yield for the period under review is computed at approximately 32,800 tons as against 51,500 tons in the previous year and the planted area was 28,000 compared with 37,000 dunums in 1944. The selling prices, except for a short period, were firm and remunerative at £P. 35 to £P. 40 per ton.

58. The erection of a number of cold stores by farmers has been an important contribution towards the progress of potato growing in this country, as growers are enabled to store potatoes during the glut period and also cold storage has been found to be the best method of keeping seed in good condition for autumn planting. An effort is being made by Jewish farmers to reduce the prevailing high costs of production by the use of potato planters and diggers, numbers of which have been ordered.

Tobacco.

59. The area to be planted with tobacco is regulated annually by the issue of permits by the Director of Customs, Excise and Trade to growers of this crop; permits for 21,000 dunums of tobacco and 605 dunums of tombac were issued for the year under review. Of this area only 17,240 dunums of tobacco and 605 dunums of tombac were planted with a production of 743,095 kilogrammes of tobacco and 34,622 kilogrammes of tombac. The crop for the year under review was average.

60. In view of the fact that there was still a balance of the 1944 crop not utilised and as there were large stocks of tobacco held by manufacturers, due to lack of export facilities and to larger imports of foreign tobacco, permits issued for the 1946 crop were further curtailed to cover 17,500 dunums of tobacco and 500 dunums of tombac.

61. Prices received by growers continue to be unsatisfactory as they are largely at the mercy of the manufacturers and there is very little incentive to produce a higher grade leaf. This matter is receiving the attention of the department with a view to bringing about an improvement.

Floriculture.

62. The establishment of a cut flower and flower seed trade in this country has long been contemplated as climatic soil conditions are ideal. During the war period this industry could not be encouraged owing to the necessity for food production and also transport difficulties.

63. There has recently been a renewed interest and big expansion in this branch due to the steady and increased demand for cut flowers by the urban population and also to the removal of export restrictions with the possibilities of air transport.

64. Trial consignments of cut flowers (gladioli, roses, etc.) were exported by air to the United Kingdom and the United States by growers with successful and remunerative results. The results of consignments of bulbs and seeds exported during the year were also encouraging.

Fruits other than Citrus.

Plantings.

65. There is a steady extension of the planting of various kinds of fruits; farmers are realising more and more that in many areas fruit growing is often more remunerative than other cultures and, in addition, the local market demand is increasing. Arab growers are still concentrating on olives, vines and figs, but in the Jewish settlements more interest is shown in pome fruits and plums, though in 1946 high nursery prices tended to limit new plantings. It is estimated that during the year under review the 90 private nurseries sold 15,000 budded olive trees, 136,000 budded fruit trees, 118,000 budded citrus trees and citrus stocks and 250,000 grafted vines; approximate departmental nursery production and disposal is tabulated below :—

	Produced	Sold	Issued (1)	Replanted/ Destroyed (2)
Budded olive trees	6,700	3,500	2,800	400
Budded fruit trees	16,800	10,550	5,400	850
Unbudded fruit trees	16,350	6,700	4,250	5,400
Grafted vines	50,000	31,000	16,000	3,000

Notes: (1) issued to departments, institutions, departmental stations and demonstration plots. (2) Mostly replanted.

The scheme of disposal of departmental nursery production was essentially that reported in 1944-45.

General Aspects.

66. The unfavourable weather conditions during the winter of 1944/45 adversely affected normal development of fruit trees. The continuous rains throughout the winter considerably delayed normal cultural operations; the heavier soils were water-logged and in the spring there was abnormal weed growth in the orchards. In consequence, it was only late in spring that cultivation could be carried out and this resulted in many cases in a bad set of fruit and retarded development of trees. A number of orchards, especially the weaker ones, declined and many trees died from water-logging. The summer season was rather mild; *Khamsins* were not severe and did not cause any appreciable damage to crops. Root rots were the main diseases to be recorded during the year; powdery mildew also caused some damage. Insect pests were not as serious as in 1944/45, although some damage was caused by *Parlatoria* scale, codling moth, red spider and woolley aphid; leopard moth attacked apples, *Psylla* caused severe damage to pears and Mediterranean fruit fly badly affected the crop of apricots and peaches.

Olives.

67. The olive crop was above average. The bloom was heavy and although fruit drop was considerable a good crop was set throughout the country. The development of the fruit was normal and it was only lightly attacked by the olive fly. The oil yields were generally very satisfactory and about 11,000 tons of oil were produced. The oil prices remained high at around £P. 220—240 per ton of edible quality oil and £P. 200—230 for industrial oil. A good quantity of olives, both green and black, was pickled and sold at good prices; green olives sold at about 60—90 mils per kilogramme and black olives at 80—100 mils per kilogramme.

Bananas.

68. The year was very favourable for the development of bananas and a good set of fruit was produced throughout the country. The total production for the year was approximately 10,000 tons, of which some 5,000 tons were produced at Jericho, 3,100 tons in the Tiberias area and 1,800 tons on the coast. The retail price was £P. 90 per ton. Relatively extensive new areas, totalling about 700 dunums, were planted in the Jordan Valley and in the coastal area.

Grapes.

69. In spite of the adverse weather conditions during the spring, vineyards set good crops in many areas; some damage was caused by frost but on the whole the season was quite satisfactory, though in the mountains the crops were only normal in the Hebron and Ramallah districts. The ripening of grapes was considerably retarded by the wet winter and early varieties suffered from drop of berries and generally bore small clusters which reduced the final weight of the crop. Of the early varieties, Queen of the Vineyards has given good crops and been favourably received on the market; of the late varieties, Flame Tokay is very promising. As regards pests and diseases, the grape berry moth attack was quite heavy; mealybug continued to spread in the vineyards along the coast and this together with powdery mildew and downy mildew caused a marked decrease in the marketable coastal crop. A yield of 5,663 tons of wine grapes was obtained — 1 ton of grapes produces on an average 750 litres of wine.

Sub-Tropical Fruits.

70. Sub-tropical fruits increased in popularity during the year and there was a big demand in nurseries for most sub-tropical fruit trees. The fig crop was only fair and was mostly used for drying and jam making; prices of fresh figs ranged from 30 — 80 mils per kilogramme. The pomegranate has become a popular fruit for the production of juice; larger quantities of guavas, avocados and mangoes appeared on the market. Date culture is steadily increasing in the Gaza district and in the Jordan Valley; the date crop in 1945 was generally lower than that of 1944.

Stone Fruits.

71. The apricot crop was only fair to poor; the early varieties suffered from brown rot and the later varieties were badly attacked by the Mediterranean fruit fly. Most plums set a good crop but ripening of all varieties was retarded by from 7 to 10 days. Early varieties such as Beauty, Methley and Santa Rosa fetched very good prices; but the midseason plums such as Ogden and Wickson met with little demand and thus gave poor returns. Some of the plums marketed were artificially ripened with ethylene gas; the treated fruit, which was marketed at good prices, was of good colour, maturity was hastened and the cost of picking was reduced since all the crop was picked at one time. Prices for plums were in general lower than in previous years owing to the heavy local crop, competition with early grapes and imports of plums from the Lebanon. Prices ranges between £P. 45 and £P. 70 per ton wholesale. Only a small quantity was sent to jam factories. The peach crop was rather poor largely owing to hot winds in May which caused a considerable drop of the young fruit. There was an excellent set of almonds in the Gaza and Ramle districts, but in the Tulkarm area the yields were low. The quality was good and the wholesale price of soft shelled almonds in shell was from £P. 100 — 120 per ton; bitter almonds fetched from £P. 55 — 60 per ton.

Pome Fruits.

72. The 1945 apple crop was only about 50 per cent. of normal on account of the continuous rainy season, the lack of cultivation in spring and the hot weather in May at the time of setting. In addition, the fruit was generally small in size. The trees, however, showed a good growth development. About 1,000 tons of apples were cold stored in the country. Prices of early apple varieties ranged between £P. 120 and £P. 150 per ton, but for mid-season varieties the market dropped to from £P. 70 to £P. 100 per ton. The drop in apple prices compared with those of 1944 was mainly due to the lower grade of fruit and relatively heavy imports from abroad. The pear crop was even worse than the apple crop, being particularly affected by the hot winds during the setting period; prices ranged between £P. 80—150 per ton wholesale.

Poultry Husbandry.

73. Materials for poultry house construction were in better supply than during the previous year and some expansion of the industry was possible. The supply of feeding stuffs at the right time continue to give some anxiety, however. The initiation of a pedigree breeding scheme embracing the whole of the Jewish settlements has now made very considerable headway, and satisfactory progress has been made towards restoring the vigour and fecundity of the White Leghorn breed.

74. An unprecedented attack of Newcastle disease swept the country during the autumn of 1945 and heavy losses were sustained. This was effectively checked by the importation of vaccine from India. A highly successful breeding season within the framework of the pedigree breeding scheme has enabled the settlements more than to replace their losses.

75. It was decided not to operate the Government hatcheries during the 1945-46 season, as, in addition to the outbreak of Newcastle disease, fowl plague was also rampant at the commencement of the hatching season. A scheme for decentralised hatching in Arab villages has been evolved to replace the central hatcheries and arrangements have been made for a start to be made in the ensuing breeding season. It is hoped to localise outbreaks of disease under this scheme.

76. Steps were taken to increase the goose population of the country particularly in the Huleh area, which is ideally suited for geese.

77. Eggs were in short supply during the winter months partially attributable to the disease epidemics, but there was a complete restoration of the normal situation in the spring.

Apiculture.

78. The beekeeping industry is ripe for a vigorous expansion and is only retarded by the shortage of timber for the construction of hives and by scarcity of sugar for autumn and winter feeding. It was only possible to allow beekeepers 3 kilogrammes per hive during the winter.

79. It is now computed that there are about 36,000 modern hives in the country owned by some 570 beekeepers. Considerable advance has been made during the year in beekeeping among the Arab villagers.

80. The honey crop was exceptionally good, and approximately 400 tons were produced for local marketing. The subsidiary product, wax, is produced in ever increasing quantities and there are now five manufacturers of wax foundations in the country.

81. Arrangements have been made for the import of Italian queens to improve the quality of the stock.

82. Incidence of disease and hornet attacks on colonies were considerably less than in previous years.

Animal Husbandry.

83. As a result of the abundant rain during the 1944-45 season, there was an excellent growth of natural vegetation containing a high percentage of leguminous plants; grazing was therefore extremely good with a beneficial effect on all grazing livestock.

84. The widespread outbreak of foot-and-mouth disease caused considerable alarm amongst dairy farmers and resulted in a severe drop in milk yields with udder infections and other secondary complications. Vaccination was carried out in most settlements and appears to have been successful; local (*Baladi*) cattle did not suffer to anything like the same extent owing to their comparative immunity. Flocks of sheep kept by Jewish settlements were kept up to strength, a number were affected by foot-and-mouth disease but the outbreak was not as serious as in the case of cattle. However, difficulties arose as many flocks had to be stalled for quarantine reasons. Free-ranging sheep and goats suffered as usual towards the end of the summer and in the autumn owing to the drying up and disappearance of all natural vegetation.

85. The good prices obtained for fresh milk encouraged farmers to expand their herds and steady development of cattle breeding took place. Milk yields increased and a considerable quantity of it went to factories for the production of dairy products. It is encouraging to note that certain Arab villages, particularly those in the vicinity of Jaffa and Tel Aviv, are taking an increasing interest in milk production and keeping their cows under better conditions; quite a number have gone in for breeding, chiefly with Friesians and cross-breeds; attempts are being made to organise marketing of milk from these small Arab farms and small dairies have been established here and there.

Fisheries.

86. Sustained demand for fish in the markets and high prices, particularly in the earlier part of the year under review, kept fishermen fully occupied as far as wartime restrictions allowed. Fishing gear continued in short supply and was difficult to obtain but the situation showed signs of improving towards the end of the season.

Production.

87. The following table shows the aggregate landings and value of fish from marine and fresh water compared with the previous season :—

LANDINGS OF LOCALLY CAUGHT FISH DURING THE YEARS 1944/45 AND 1945/46.

(Weight to nearest ton — values to nearest £P. 10.)

	Year	Landings Tons	Percentage on Total Landings	Value £P.
A. Marine fish landed by local fishermen.	1944/45	2,924	68	773,210
	1945/46	2,259	55	487,760
*B. Fresh-water fish landed by local fishermen.	1944/45	1,307	31	436,570
	1945/46	1,818	44	586,890
C. Total landings by local fishermen.	1944/45	4,231	99	1,209,780
	1945/46	4,077	99	1,074,650
D. Marine fish landed by foreign fishermen.	1944/45	52	1	16,500
	1945/46	28	1	6,770
E. Total landings of marine fish by local and foreign fishermen	1944/45	2,976	69	789,710
	1945/46	2,287	56	494,530
F. Grand Total of all fish landed.	1944/45	4,283	100	1,226,280
	1945/46	4,105	100	1,081,420

* Includes the production of fish ponds.

88. A slight decrease is shown in total landings, when compared with figures for the previous year, but they are nearly four times the total quantity landed during a similar period in 1938-39. Landings of fresh water fish show a considerable increase; this is largely due to a further substantial increase in the area under fish ponds. Inclement weather conditions which prevailed during the season under review were responsible for the decrease of catches of sea fish.

Species.

89. Although sardines (Mediterranean *Sardina* sp.) continue to head the list of all sea-fish caught there was a decrease of 436 tons caught during the year under review when compared with the 1944/45 season. There was an increase of 300 per cent. in the catches of Ghubbus (Box boops (L)) which, however, is not an important species. In the fresh water fisheries carp easily heads the list with 1,235 tons; the so-called fresh water "Sardines" (*Alburnus sellal*) is next on the list with a catch of 237 tons. Catches of *Musht* (St. Peter's Fish : *Telapia* spp.) showed an increase of 70 tons over the last year's figure of 34 tons : in addition to an increase in quantity there was an increase in the average size of the fish, a direct result, it is concluded, of the enforcement of the stringent rules enforced during the past four years in an effort to rebuild the dwindling stock of fish in Lake Tiberias.

Fishermen.

90. There was no appreciable change in the number of licensed fishermen during the year under review, the total number being 3,231 in 1945-46 as against 3,357 in 1944-45; this, however, is an increase of 2,105 over the total number of licensed fishermen in 1938-39. In accordance with the policy laid down in 1942 to control fishing in Lake Tiberias, the number of licensed fishermen in this fishery was restricted as in previous years to those who held licences for the lake in the 1939-40 season or earlier, allowing also for replacements.

Trawling.

91. The number of trawlers remained the same, namely, 45, of varying sizes. Two vessels have been laid up during the period under review and seven have not been fishing during 6 to 10 months of the year. Five trawlers foundered during the year and became total losses. Those which have been operating are mostly of a sturdy type and with good engines and have maintained better averages than previously. With the end of war-time restrictions on movement of vessels, it is felt that the trend should be towards deep sea-going trawlers with up-to-date equipment and refrigeration capable of putting to sea for several days at a time and thus able to reach more prolific fishing grounds.

92. The following table shows the average number of days worked per trawler per month and the catch obtained :—

MONTHLY AVERAGE PER WORKING TRAWLER BY PORTS.

P o r t	No. of Working days		Catches in tons	
	1944-45	1945-46	1944-45	1945-46
Jaffa.	15	13	2.7	2.4
Tel-Aviv.	10 ¹ / ₂	8	1.9	2.7
Haifa.	12 ¹ / ₂	10 ¹ / ₂	3.2	2.4

Aqaba Fisheries.

93. The Aqaba Fisheries scheme, operated by Government, was first inaugurated in 1942 as a wartime measure to increase the local food supply of animal protein in Palestine. The operation of the shore installation, transport and marketing were undertaken by a local firm acting as Government agents.

94. The fishing season for the period under review commenced satisfactorily but owing to the frequent breakdowns of the engine of the M.S.V. "Doron" the results for the year were disappointing. Every endeavour was made to increase the local catches at Aqaba and the launch "Anis" was used near Aqaba mainly for the collection of the Spiny Lobster or Crawfish (*Palinurus*) which are abundant in this area.

95. During the period under review approximately 130.5 tons of fish have been delivered in Palestine for sale in Jaffa/Tel Aviv, Haifa, Jerusalem and Ramle, and retailed at an average price of 6s per kilogramme.

Lake Tiberias (Sea of Galilee).

96. The strict measures taken in 1942, as a result of an investigation carried out by Dr. C. K. Ricardo Bertram, to prevent further depletion of stock in the Lake were continued during the period under review. The control measures enforced included restriction of the number of fishermen licensed to fish in the Lake, rules prescribing the mesh size of nets and prosecutions for the catching of under-sized fish. There are already indications of an improvement in the fish content of the lake both in quantity and size of fish caught; the advisability of continuing the restrictions appear to have been amply demonstrated. Future policy will be directed towards maintaining a rational fishery in the Lake.

Fish Ponds.

97. The development of fish farming has made spectacular progress during the war. From only a few dunums in 1939, the area under fish ponds has increased to around 8,000 dunums — an increase of 2,000 dunums on the previous year's figure. The fish produced from these ponds is almost entirely carp and in the year under review the production exceeded 1,000 tons. Fish farming is confined as yet to the Jewish community only, the majority of the ponds being in the Jordan Valley, the northern coastal plain and in the Huleh area. The Jewish Agency (Maritime Department) has a small research station near Beisan where problems concerning breeding, feeding, rates of growth and disease problems are studied.

98. The first set-back to the new and rapidly developing industry occurred in the autumn of 1945 when some 300 tons of carp were lost due to a heavy mortality in certain ponds in the Beisan area. As a result of research carried out at the Hebrew University, it was established that this mortality was due to a free living phyto-flagellate (*Prymnesium parvum*) which produces a water-soluble toxin fatal to a variety of fishes. This flagellate has so far only been found in ponds with a water salinity of 500 milligrammes chlorine per litre or more. An effective treatment has since been found. Ammonium sulphate in a concentration of one part in 100,000 parts of water — kills the flagellate in about half an hour without affecting noticeably other micro-organisms or the fishes themselves.

99. Carp prices have reached extremely high levels and do not show signs of falling as in the case of other locally produced fish. At the end of 1945 live carp was selling in Jerusalem, Haifa and Tel Aviv at about 520 mils (10s. 5d.) per kilogramme.

Markets and Prices.

100. Except for carp prices, which have remained at the same high level, those of all other fish have shown an appreciable decrease during the year under review. The average price per kilogramme received by the fishermen in 1945-46 for all centres and including carp was 263 mils as compared with 286 mils in 1944-45 and 35 mils per kilogramme in 1939-40.

AGRICULTURAL MACHINERY AND FERTILIZERS.

Agricultural Machinery.

101. By the end of March, 1946 machinery obtained through Lease/Lend channels included 380 wheel tractors, 395 tractordrawn ploughs and cultivators, and 120 combines. These supplies and other imports under commercial licences were sufficient to permit the lifting of distribution control measures.

102. Machinery imported under commercial licences included a few crawler tractors, self-propelled combines, automatic pick-up balers, "garden" tractors and bulldozing and ancillary tackle for soil conservation work. Palestinian farmers prefer crawler tractors as they are undoubtedly of greater all-round usefulness under local conditions. Unfortunately crawler tractors are in short supply, not more than an average of five a month being procurable. Importers have outstanding orders for nearly four hundred crawlers.

Fertilizers.

(a) Nitrogenous.

103. During the years 1942-45 nitrogenous fertilizers imported on Government account under quota allocations amounted to 23,740 tons. The principal

fertilizer was Sulphate of Ammonia with a few hundred tons each of Urea, Nitrate of Soda, and Calcium Cyanamide. The last type is not suitable for the alkaline soil of Palestine.

104. In the calendar year of 1945, 10,713 tons Sulphate of Ammonia were consumed of which 5,456 tons were applied to citrus. The annual demand is expected to reach 18,000 tons in 1946/47 and 25,000 tons in 1947/48.

(b) *Phosphatic.*

105. The manufacture of Single Superphosphate (16% P_2O_5 water soluble) from Trans-Jordan rock phosphate and locally produced acid tar and sulphuric acid was started by a Palestinian firm in 1942. This production was subject to Government control until the 1st August, 1945. During the period of control 29,444 tons were sold, of which 11,737 tons were purchased by Palestine, 7,800 tons by Cyprus, 5,600 tons by Syria and Lebanon and 4,307 tons by the Army. The factory is continuing in production; there were no imports of this fertilizer during the period under review.

(c) *Potassic.*

106. Palestine has been fortunate throughout the war years in the availability of ample supplies of Muriate of Potash from the plant at the Dead Sea. In 1945, 3,015 tons were used for agriculture in Palestine.

(d) *Organic.*

107. As stated in the report for 1944/45 the shortage of organic manure remains one of the most serious agricultural problems in this territory. The practice of composting by the Indore system is gradually extending despite the high labour requirement and the high wage of around £P. 1.500 mils per day for Jewish labour. The other possible source, the conversion of town refuse in closed cells by the Boggiano-Pico process, is as yet still under consideration by the larger municipalities.

AGRICULTURAL STATISTICS.

108. The following table contains particulars of the areas planted with all important crops with the exception of citrus (which is the subject of separate treatment at the beginning of this section of the report) :—

AREAS UNDER PRINCIPAL CROPS BETWEEN 1936 AND 1945 WITH YIELDS.

	1936		1939		1942		1945	
	Sq. Kms.	Tons	Sq. Kms.	Tons	Sq. Kms.	Tons	Sq. Kms.	Tons
<i>Grains and Legumes.</i>								
Wheat	2320.1	76,059	1863.7	89,190	2008.6	104,392	1378.5*	58,355*
Barley.	2723.2	55,169	1926.0	86,230	1889.3	114,518	1575.9*	74,906*
Kersenneh.	232.7	7,378	153.0	5,500	170.1	7,850	193.2	11,264
Maize.	66.8	14,303	78.2	6,197	57.3	2,734	62.2	5,289
Millet.	772.1	22,122	937.1	42,896	1060.2	57,965	752.9	37,311
Sesame.	98.7	1,847	191.0	3,754	194.2	6,214	106.2	4,726
Others.	152.0	4,822	218.0	7,875	209.7	11,213	298.7	17,904
Total	6365.6	181,700	5367.0	241,642	5589.4	304,886	4367.6	209,755
<i>Vegetables</i>								
Cabbages.	4.3	4,332	4.5	7,957	6.6	10,681	8.4	13,030
Cauliflowers.	5.8	4,454	6.3	8,233	8.7	10,604	12.3	13,391
Tomates.	43.2	19,027	44.0	36,851	67.7	55,089	80.3	60,457
Cucumbers.	20.7	6,801	16.9	15,117	23.3	20,382	26.6	19,606
Potatoes	9.7	5,000	8.5	10,480	19.7	22,790	28.5	32,816
Others.	62.2	30,707	58.4	50,735	101.4	71,680	123.8	105,534
Total	145.9	70,321	138.6	129,373	227.4	191,226	279.9	244,834
<i>Plantation Crops</i>								
Olives.	510.3	15,755	571.7	35,232	594.4	62,708	600.1	79,469
Grapes.	182.6	49,755	183.9	45,433	172.7	52,771	178.3	45,634
Almonds.	24.4	3,910	35.4	4,006	36.7	3,129	38.1	4,392
Figs.	109.0	16,421	106.1	26,048	105.3	22,828	108.0	19,589
Apples.	8.0	1,112	12.3	1,737	15.4	3,285	17.7	4,931
Plums.	1.2	378	3.8	899	4.0	1,304	6.5	2,372
Bananas.	4.5	7,609	4.2	5,615	6.4	7,576	8.0	8,143
Others.	28.7	10,610	32.9	12,286	34.0	11,729	36.4	9,757
Total	868.7	105,550	950.3	131,256	968.9	165,330	993.1	174,187
Melons.	177.4	81,335	122.3	86,892	84.9	64,717	126.0	142,827
Tobacco.	30.0	1,237	15.1	523	25.2	1,419	22.2	815
GRAND TOTAL.	7587.6	—	6593.3	—	6895.8	—	5788.9	—

* These figures are to be treated with reserve; these has no doubt been some under-estimation on account of compulsory distribution schemes. The Department of Agriculture estimates the average annual area under wheat and barley together at 4,500 sq. kilometres.

SECTION II.

WORK OF THE DEPARTMENT OF AGRICULTURE AND FISHERIES.

ESTABLISHMENT.

109. The establishment of senior officers at the close of the year under review was as follows :—

Director	: Captain F. R. Mason.
Deputy Director and Controller of	: Mr. D. Stedman Davies.
Agricultural Production	:
Senior Agricultural Officer	: Mr. J. C. Eyre.
Senior Agricultural Officer	: Vacant.
Chief Horticultural Officer	: Mr. A. C. Shill.
Chief Plant Protection Officer	: Vacant.
Chief Fisheries Officer	: Vacant.

Retirement.

110. Mr. S. Antebi, Agricultural Officer, retired from the service on the 3rd January, 1946. Mr. Antebi was first appointed on the 21st August, 1920, and served the greater part of the time in the Lydda District.

Resignation.

111. Dr. J. E. Hardy, Chief Plant Protection Officer, resigned his appointment and proceeded to the United Kingdom on the 18th December, 1945, Mr. P. Jolles, Senior Plant Protection Officer, acted as Chief Plant Protection Officer until the close of the year under review.

New Appointments.

112. Mr. A. Jefferiss was appointed Chief Fruit Inspector with effect from the 7th March, 1945, in place of Mr. R. E. Hunter who left the country on termination of agreement on the 18th November, 1943. Miss M. D. Ball was appointed Personal Assistant to the Director on the 12th February, 1945, *vice* Mr. W. L. Ricketts who was appointed Registrar of Co-operative Societies. Messrs. A. R. Khalaf and A. Kamm were appointed Agricultural Officers on the 29th March, 1945 and the 20th January, 1946, respectively.

Obituary.

113. It is with deep regret that I have to record the death in January, 1946, after a long illness, of Miss K. Abbud, clerical officer, who had loyally served in the department since the 1st April, 1920; also of Mr. K. Azzam, Fisheries Assistant, in July 1945.

THE AGRICULTURAL SERVICE.

Organisation.

114. With the appointment of a sixth Agricultural Officer in March 1945, it was possible to allocate one Agricultural Officer to each Administrative District, thus avoiding the difficulties previously experienced by certain District Commissioners having two or more Agricultural Officers in charge of agricultural administration within their respective Districts, except in the case of the Acre sub-district which still comes within the purview of the Agricultural Officer, Haifa, although part of the administrative district of Galilee.

115. As in the case of previous war years, a considerable amount of the time of field staff was devoted to work connected with the increase of food production, organised by the Deputy Director who continued to function as Controller of Agricultural Production throughout the year under review. This involved the distribution of seeds, fertilizers, farm machinery and implements, etc.; it was the duty of the field staff to check applications for permits to acquire controlled materials and arrange local distribution of planting material.

The Government Farm, Acre.

116. Much of the activity on the Agricultural Station at the Government Farm was devoted to the production of seeds and other planting material, in addition to a continuation of plant breeding and experimental work. The area under cultivation, including outlying areas used for seed multiplication, during the season under review totalled 6,940 dunums, 640 dunums of which were under irrigation.

Production of Planting Material.

117. 156 tons of selected varieties and strains of wheat, barley, oats and maize were produced and issued to farmers for seed increase under departmental supervision. 37 tons of seed potatoes were grown on carefully rogued plots, stored through the summer months in the farm's cold store and issued to farmers for autumn planting. With an improvement in the local supply of vegetable seeds, the continuation of the large-scale production by the farm became unnecessary and the areas previously devoted to vegetable seed raising were considerably reduced.

118. Vegetable seedling production was, however, continued on the same scale as in previous years; 140 dunums of nurseries produced approximately eight million seedlings of tomatoes, cauliflowers, cabbage, onions, etc. which were sold at nominal prices to farmers or issued free to army units, police posts and school gardens.

Experiments and Demonstrations.

119. Plant breeding by selection and hybridisation has continued on wheat, barley, cauliflowers, tomatoes and onions. With the gradual return to normal peace-time activities in the department a large assortment of new varieties of cereals, forage and vegetable crops has been introduced from many countries and their value under local conditions is being ascertained. Experimental work on the station and on numerous farms in co-operation with the Jewish Cereal Growers and Vegetable Growers Associations has been continued and extended. 115 experimental plots were laid down in all parts of the country covering the following range of problems :—

Cereals. — Variety trials of wheat, barley and oats; fertilizer trials on wheat; effect of preceding crops on wheat; effect of green manures and irrigation experiments on wheat; seed rates and time of sowing of rye.

Forage and hay. — Manurial requirements of Fahli berseem (single-cut Egyptian clover), vetch and oats, and stock beets; seed rates and times of sowing Fahli berseem.

Pasture investigations. — Seed mixtures, carrying capacity and treatment of artificial (irrigated) pastures; rotation demonstration plots.

Organic manures. — Comparisons between various composts, farmyard manure and Huleh peat; both direct and after effects of organic manures on

irrigated and dry-farming crops. A large scale compost "factory" has been established near the entrance to the farm which serves as a practical demonstration of the Indore process to the numerous farmers who visit the station.

Vegetables. — Manurial requirements, degeneration, variety trials, trials with rose-ends, seed rates and spacing of potatoes; mulching experiments, methods of sowing, planting versus sowing in situ, and timing experiments on various vegetable crops.

120. A considerable amount of valuable data has been accumulated during the war years but owing to shortage of staff to compile the results of experiments and lack of printing facilities it has not been possible to publish them for general information. Important results have, however, been brought to the attention of farmers from time to time through their own agricultural publications. Arrangements are now in hand to publish a series of articles covering the results of research work during the past few years.

General.

121. As a contribution to the food production campaign, 6,000 dunums of land were ploughed at reduced rates by the farm tractors for Arab farmers in areas adjoining the farm lands. In addition to grain received in exchange for selected seed issued to farmers, 400 tons of hay, 300 tons of straw, 1,400 tons of green fodder and 57 tons of grain were produced on the farm for feeding to livestock. A group of boys from the Government School, Acre, have been given regular practical training in vegetable growing. Approximately 100 boys from the Reformatory School nearby are regularly employed on the farm; the boys have worked very well and are given every opportunity to learn modern agricultural methods.

District Agricultural Stations.

122. Agricultural stations have been maintained throughout the year at Kafr Anan in the north and Majdal in the south, with agricultural sections at horticultural stations at Nablus, Ein Arrub and Jericho. The station at Kafr Anan was used mainly for cereal seed multiplication, while at Majdal vetch, berseem and maize were also grown for seed. The layout of the latter station, both agricultural and horticultural sections, has been entirely rearranged in conformity with the contours of the land; broad base terraces have been formed along contours and a revised system of strip-cropping introduced with a suitable rotation. This work and the almost immediate improvement of soil conservation has aroused considerable interest amongst local farmers.

123. At the Jericho station, which caters for the comparatively hot and dry climate of the lower Jordan Valley, variety trials and seed multiplication were carried out with cereals; vegetable seed production of garden peas, egg plants, peppers and certain varieties of cauliflower gave good results; the raising and distribution of vegetable seedlings continued to be one of the many services rendered to local farmers. At Ein Arrub, in the Judean hills, seed multiplication of cereals suited to the area was the main activity; the results from rye grown on a very shallow soil were excellent and indicate a useful additional cereal for this area. The dry-farming station at Beersheba was also laid out on the contour, ploughed and left fallow for the 1946-47 season.

124. A number of vegetable nurseries were maintained in various parts of the country for the raising of vegetable seedlings for distribution at nominal prices.

Soil Conservation.

125. After the general apathy shown in the past towards the dangers of soil erosion it is a pleasure to record an increasing interest on the part of farmers in soil conservation measures. Apart from the measures taken on agricultural stations reported above, which it is hoped will demonstrate the value of contour ploughing and planting, a number of other demonstration plots have been laid out particularly in the Gaza/Beersheba area; contour banks have been constructed and fruit trees and vines planted in basins on the upper side of these banks or bunds, where water will now collect after the sparse rainfall experienced in this area. In the hills every effort has been made to encourage farmers to terrace and reclaim some of the barren hilly slopes; this work has been further encouraged by hill terracing competitions sponsored by the Soil Conservation Board and organised by the District Administration.

126. In Galilee, lectures have been given on various aspects of soil conservation at farmers' meetings and a short course was held at the Kadoorie Agricultural School, Mt. Tabor, where instruction was given in topographic surveying, contour cultivation, construction of broad base terraces and gully reclamation. The "Public Committee for Soil Conservation" established with the assistance and advice of the Assistant Conservator of Forests amongst the Jewish farming community has been active throughout the year and has been responsible for a marked increase in contour ploughing on Jewish settlements; particularly good progress has been made with the construction of broad base terraces and gully control on two settlements in the badly eroded area north east of Gaza. The secretary of the committee proceeded to the U.S.A. to study soil conservation methods there.

Poultry and Beekeeping.

127. Progress has been made with the education of the Arab villager with regard to modern poultry keeping by the reorganisation of the poultry section of the Kadoorie Agricultural School, Tulkarm, and the decision to establish a demonstration poultry station at Nablus.

128. The two Government poultry stations at Acre and Jerusalem, continued to render valuable assistance to the industry. Although the birds at the Jerusalem station were affected by Newcastle disease, the station at Acre had a highly successful rearing season, which enabled the losses at Jerusalem to be quickly replaced. The new stock imported from the United Kingdom in 1944 has had a very beneficial influence on breeding. A number of experiments have been carried out and over 2,000 cockerels were distributed for breeding purposes, together with large numbers of hatching eggs, day-old chicks and pullets of the European breeds.

129. About 500 swarms of bees were produced in the Government apiaries and distributed to establish new apiaries in many parts of the country. In view of the acute shortage of sugar in Palestine a number of feeding experiments were carried out in the Government apiaries; other experiments were carried out in conjunction with the Jewish Agency Agricultural Research Station, Rehovot.

THE HORTICULTURAL SERVICE.

130. The extension of planting of fruit trees in most parts of the country has called for much advisory work amongst growers and fully justified the scheme for increased department nursery production which was begun in

1945. The advisory work is largely based on information obtained from trials carried out at departmental stations and at privately owned demonstration plots planned and supervised by departmental officers; apart from advice direct to individual growers, information was given through the medium of shows and of growers' days at stations at crop times of major fruits; growers' days are particularly useful — and relatively inexpensive — and give growers the opportunity of observing on the spot different varieties, rootstock effects, etc.

131. Normal progress was made with the general work at the eight Horticultural Stations. It is to be noted that it was necessary, in order to combat soil erosion, to replant on contours most of the young plantations at Majdal Station. Particular attention was paid in stations to nursery development; in this connection the Horticultural Station area at the Government Farm, Acre, was extended by 30 dunums (with a further 30 dunums in 1946) and at Majdal Station the Horticultural Station area was increased by 100 dunums, mainly for nursery work. The Nablus Station was extended by 150 dunums — 50 dunums for general departmental use — and, whilst some of this new area will be used for nursery work, the majority will be utilised for study of problems concerning olive culture. In connection with the nursery expansion programme, 120,000 olive seedlings and 116,000 fruit tree seedlings, layers and cuttings were planted out in stations.

132. The good olive crop gave every opportunity for work concerning further improvement of olive oil production. A growers' day was held at the Nablus Station when demonstrations were given on picking and transport of olives and the various oil and pickling varieties were shown and their qualities described. An olive oil press competition for all sub-districts was organised and prizes given for the presses which made most improvement during the year and which were maintained in good condition throughout the pressing season; 1st and 2nd prizes were awarded in each sub-district. An unrefined edible oil competition open to all growers producing commercial quantities was also organised; 63 entries were received — from Acre 24, Jenin 7, Tiberias 6, Tulkarm 5, Jerusalem 5, Safad 4, Ramallah 4, Lydda 4, Nablus 3, and Hebron 1; the oil samples were judged for acidity, colour, taste and aroma. In the summer of 1945 the control over the olive oil press inspectors (5 regular inspectors and 8 seasonal) was transferred from the Department of Health to the Department of Agriculture and this facilitated executive and advisory work of a horticultural nature; the increasing appreciation of the need for production of good quality oil resulted in 27 new mechanical presses being installed and, through licensing procedure, many presses in old caves and unsuitable premises were closed down; considerable assistance was also given to press owners for supply of controlled materials for repair and improvement of their premises. As a result of this work, there was an appreciable increase in the percentage of edible oil produced in most sub-districts.

133. Apart from the olive growers' day at Nablus Station, a similar day for vine growers was held at Ein Arroub Station when varieties suitable for the Hebron sub-district were shown on the vines; the training of vines was also demonstrated. A Grape Show, which was held at the Mikveh Israel Agricultural School, was arranged by the Department in co-operation with the School; 250 varieties of table, raisin and wine grapes were exhibited and vine diseases and pests were shown. Fruit drying demonstrations were arranged at most stations during the year and dried fruit Shows were held at the Mt. Tabor, Tulkarm and Mikveh Israel Agricultural Schools. These Shows and growers' days resulted in an increased demand from Stations for budwood and cuttings, many thousands of which were given to growers.

134. On the investigational side, apart from general studies in stations of different varieties, of the effect of various rootstocks and of different cultural methods, the main problems which were investigated at stations and demonstration plots are stated briefly below, the results obtained being given where possible.

At demonstration plots in the Gaza and Beersheba districts, studies are proceeding to ascertain the best methods of planting fruit trees in such low rainfall areas and of use of water under such conditions, i.e. planting in walled wadis, wider planting distances, leading rain water to the trees from adjoining slopes and supplementing the rainfall with winter and early spring irrigation at a time when irrigation water can be spared. The effect of such winter and spring irrigation on growth and yield of trees is being specially studied.

A comparison of overhead and furrow irrigation with deciduous tree orchards is being carried out in the Huleh area.

The grapefruit irrigation experiment at Sarafand Station is continuing and it should soon be possible to arrive at conclusions; the trees are irrigated either 5 times a season with 45 cubic metres per dunum at intervals of 21 days or 3 times with 40 cubic metres at intervals of 40 days.

The suitability of different kinds and varieties of fruit trees and vine stocks to alkaline soil conditions is being studied, mostly at Farwana Station. Fruits under trial are: dates, olives, vine, pomegranates, persimmons, loquats, annonas, mangoes, avocados, citrus and deciduous fruits.

The bearing which the addition of potash may have on the curing of lime induced chlorosis is being studied in plantations in the Emek settlements.

Weed control in orchards by spraying with 2,4-D in solution, dusting with 2,4-D, and spraying with oil No. 2 of the Shell Company and with a Palestine Potash Company product.

The prevention of pre-harvest drop of apples by spraying with Phyomone is being studied in stations and in private orchards.

The effect on fruit size of ringing branches, thinning branches and thinning fruit is being studied with olives at the Farwana and Farradiya Stations and at Hulda settlement.

Self-fruitfulness and self-sterility of olives are being studied at Farwana and Farradiya Stations.

Further trials are being carried out in Kinneret to ascertain possible early varieties of grapes other than Queen of the Vineyards and Pearl of Czaba; similar trials with late varieties are proceeding at Manarah.

The increase in size of grapefruits during the export season was noted at Sarafand Station by measuring 250 sample fruits between early November and early March, 1945-46; during this period the average increase in circumference was 18 per cent. shaded fruit showing the highest increase; the average increase in fruit weight was approximately 50 per cent.

Observations continued at Sarafand Station on the effect of different planting distances with Shamouti oranges (6 x 6, 6 x 4 and 4 x 4 metres); the trees, which are now in full production, are giving best results with the 6 x 6 planting distance.

As regards lemons on different rootstocks and summer crop yields, the Eureka variety on rough lemon stock is giving the best results at Sarafand Station.

The study of the influence of rootstock on yield and size of Shamouti oranges is still proceeding at the same Station, but it is yet too early to draw conclusions. As regards the effect of rootstock on the fruit, Shamouti oranges on sour orange and sweet orange stock give juice with higher sugar and acid content than oranges on rough lemon or sweet lime stock, the latter stocks thus giving rather a "flat" juice.

The rootstock trial with grapefruit at Sarafand Station has shown that rough lemon stock gives the largest and most productive trees.

A study of vine stocks for nematode resistance showed that the best were Solonis Othello 1613 and Solonis Riparia 1616, followed by Dogridge and Salt Creek.

Propagation trials of Karassia (local plum) seeds at Acre Station showed that those kept in cold storage for two months gave the best germination.

As regards the best time to sow olive seeds, trials of various varieties at different stations indicated that early sowing in October-November gives the best germination.

A study is being made at Sarafand Station of the resistance of various varieties of local quince stocks to lime chlorosis; 4 varieties of pears (Superfine, Amanlis, Bartlett and Ain-Harodi) are being tested on 11 quince stocks.

At Acre Station the general study of the resistance of local fruit stocks to nematodes is continuing.

At the same station trials are being carried out to ascertain the best methods of propagating stocks (mostly Myrobolan 29, Marianna and Karassia Acre) by cuttings, i.e. the branches to use, the time of preparing cuttings and the time of planting out.

The study of the desirable extent of de-suckering bananas continued at Jericho Station.

THE PLANT PROTECTION SERVICE.

Identifications.

135. With the resumption of safer and faster means of communication with the United Kingdom it became possible to transmit once more specimens of insects for identification by the Imperial Institute of Entomology. During the year under review five consignments of insects were sent to the Institute and duly returned with a report on identification. Five consignments of diseased plants were sent to the Chief Plant Pathologist of the Jewish Agency Agricultural Research Station at Rehovot for favour of examination and identification of the disease.

Research and Investigations.

Citrus Pests.

136. A survey of groves infested with Black Scale (*Chrysomphalus aonidum*, Ashm.) which was carried out in co-operation with the Fruit Inspection Service, revealed a total infested area of 60,000 dunums of which 18,000 dunums were of heavy, 12,000 of medium and 30,000 of light, infestation. In view of the financial difficulties of citrus growers as a result of the war and in order to

assist them to control Black Scale, which had reached dangerous proportions, approval was obtained for a Government grant totalling £P. 150,000 to be expended over a period of three years. Out of this sum grants are being made to individual growers to meet approximately half the cost of control. Owing to the late arrival of control materials and equipment a total of about 10,000 dunums only was treated during the 1945 season. Spraying experiments were continued with two more oil sprays one of which contained D.D.T.; results are not yet apparent. Fumigation experiments with liquid hydrogen cyanide, continued from the previous season, showed that a dosage of 18 cubic centimetres of *HCN* per 100 cubic feet gives satisfactory commercial control under local conditions.

137. The first recorded outbreak of Silver Rust Mite, which damages and spoils citrus fruit was reported from the Gaza area. An area of approximately 500 dunums was found to be infested during the season under review and the loss sustained was estimated to be around 200,000 cases of fruit unfit for export.

138. The mealy bug (*Pseudococcus comstocki*, Kuw.) which attacks citrus did not cause special anxiety, remaining latent as it did during the previous year. Nevertheless, owing to its presence in some groves and its constant but slow spread, there was a great demand for the parasite, *Clausenia purpurea* Ishii., of which more than 50,000 individuals were distributed to citrus growers. There was an increased demand this season from Arab growers.

Pests of Deciduous Fruit Trees.

139. Experiments on the control of the *Capnodis* borers, — *C. carbonaria*, Klug. and *C. tenebrionis*, L. — which attack the roots of stone fruit trees, have been continued; a practicable and efficient method of control has not yet been devised. Control experiments with winter washes against *Parlatoria oleae*, Colv., a scale insect mainly attacking apples, were continued; one pre-winter spray and two winter sprays, one applied at the beginning and another at the end of the winter, gave satisfactory results. The use of the "tank mix" method for oil sprays was also tried.

140. Experiments with D.D.T. as a control measure for the citrus mealy bug (*Pseudococcus citri*, Rosso.), on grape vines were carried out. In preliminary field control experiments against the leopard moth (*Zeuzera pyrina*, L.) attacking apples, sprays containing lead arsenate in water and a spralastic spreader were tested against D.D.T.; the D.D.T. sprays proved to be superior to lead arsenate sprays. The biology of the two last-named insects was the subject of study in the laboratory.

Shishtocerca gregaria, Forsk — *The Desert Locust.*

141. During the last week of May, 1945, mature swarms invaded the north-east of Palestine and deposited eggs over an area of about 10,000 dunums of irrigated crops. Hoppers were destroyed as they hatched by means of poisoned bait consisting of bran impregnated with 2 per cent. sodium arsenite in solution. Most of the hoppers were killed while in the first instar and in a few cases only did they reach the second instar. There were no escape of hoppers and practically no damage was done. A detailed report on the outbreak and campaign is in the course of preparation.

Plant Pathology.

142. Further experiments were carried out in connection with the control of wilt (damping-off) caused by *Fusarium* and *Pythium* species in seed beds. Field beans were badly attacked by rust (*Uromyces fabae*). Investigations and trials to produce rust resistant antirrhinum plants were continued.

Extension Work.

143. Control methods for dealing with the common pests attacking vegetables and fruit trees were demonstrated by the field staff of the Service all over the country. Demonstrations of control methods against various plant diseases were carried out in many parts of the country.

Plant Quarantine.

144. The number of consignments of plants imported was 2,207 of which 73 required fumigation. A total of 982 consignments of plants for export was examined; of these 165 were fumigated. A total of 50 fruit nursery licences were issued and one new nursery was registered.

THE FISHERIES SERVICE.

145. The Fisheries Service remained without a technical officer in charge during the year under review but we were fortunate in obtaining the services of Lt. Colonel A. G. Mason (ex Army) who was appointed Administrative Assistant and acted as Chief Fisheries Officer throughout the year. An additional Fisheries Assistant was appointed in November, 1945, to undertake duties connected with the rapidly developing fish pond industry and to keep in close touch with the Jewish Fish Breeders Association and their problems.

146. As in previous years the main activity of the Service was devoted to the administration of the Fisheries Ordinance. Over 3,000 fishing licences were issued involving the checking of each application. In view of the increase in fish bombing a special drive has been made in an endeavour to eradicate this practice so harmful to the fishing industry and it has fully occupied the time of the field staff during seven months of the year. The number of cases of contraventions under the Fisheries Ordinance brought before the Courts was 177; the number of persons involved was 302, of which 238 were convicted. Two thirds of the contraventions were shared equally by persons fishing with and/or in possession of explosives or dynamited fish and landing and/or being in possession of undersized fish; other contraventions were :— fishing without a licence, fishing during prohibited hours or in prohibited areas and frightening fish into nets.

147. The work carried out in connection with the control of fishing in Lake Tiberias is described in paragraph 96 of Section I of this report. The collection of data concerning all catches landed has been continued throughout the year.

Demonstration Fishing Boat.

148. In order to implement the drive against fish bombing, the "Forerunner" has spent a good deal of time on patrol work up and down the coast. It has, however, been possible to carry out some experimental fishing with a drift net and to search for new fishing grounds.

AGRICULTURAL EDUCATION AND PROPAGANDA.

Kadoorie Agricultural School, Mount Tabor.

149. This school remained the only Government agricultural school administered by the department; the other Kadoorie School (Arab), at Tulkarm, continued to be administered by the Department of Education for the training of teachers in agricultural subjects and pedagogy.

150. Another satisfactory year was completed at Mount Tabor, the students attaining a good standard both in studies and practical work. There were 50 students in residence during the year. Up to August there were 22 students in the second year class and 28 in their first year. The usual examinations were held in August, 1945, when 18 of the 22 second year students passed and were awarded diplomas; the other 4 re-sat examinations in certain subjects at a later date and all managed to pass. Of the first year students 25 passed the prescribed examination and qualified for entry into the second year which commenced in October with 25 students in each of the two classes. The entrance examinations were held in August, 1945 when, as usual, there were far more qualified applicants than places; 63 applied for admission of whom, for lack of accommodation, only 25 could be admitted. The selection committee reported a further improvement in the standard of the candidates applying for admission and regretted that so many promising boys had to be turned away for lack of accommodation. The health of the staff and students was good throughout the year and discipline was well maintained. Once again the students volunteered to work on the farm in relays during the summer vacation owing to the difficulty in obtaining labourers for temporary employment.

151. The staff kept in touch with old students, assisting many of them with advice whenever necessary. Of the 193 students who have obtained diplomas since the school was first established in 1934, 116 are known to have settled on farms, six have become agricultural advisers or teachers and 47 were still in the Forces at the end of the period under review. A co-operative settlement established in the neighbourhood entirely by old Kadoorie boys has made a good start.

The School Farm.

152. In spite of the rather abnormal weather conditions a fairly satisfactory year on the farm was experienced. As in other parts of the country rainfall was very low being just over half that of the previous season. Just over 36 tons of grain were harvested, 91 tons of hay, 80 tons of horse bean and barley mixture for silage and 187 tons of green fodder cut for stall feeding the dairy herd. Around 30 tons of straw were baled for feeding and bedding.

153. Soil conservation work on the hilly slopes of the farm continued to receive close attention; the effect of contour ploughing, commenced a few years ago, is having a marked effect on the wadis which are gradually being reclaimed for cultivation. More terracing has been done on the steeper slopes and forest trees planted; the effect of enclosing certain areas and controlling the grazing thereon, thus allowing proper regeneration of scrub and brush, is strikingly apparent alongside the farm boundary fence on the other side of which the bedouin continued to practice free range grazing throughout the year, in spite of advice and visible evidence of the improvement which is taking place on the school lands.

154. Over 30 tons of vegetables were produced on the school farm, most of them going to the school kitchen. The quantities of fruit picked from the school orchards were as follows :— Grapes — 7.6 tons; olives — 150 kilogrammes; grapefruit — 45,000 fruits and various deciduous fruits — 8.9 tons. 1.7 tons of pickles and 725 kilogrammes of jam were prepared for the school kitchen and small quantities of dried fruits, marmalade, etc. were prepared in the course of demonstrations and experimental work. The total value of the fruit grown was £P. 364.730 mils.

155. Over 18,000 fruit, forest and ornamental plants were raised for planting on the school lands and for distribution free of charge to neighbouring villages, schools and police posts.

Animal Husbandry.

156. The school dairy herd, consisting of 16 cows, 2 heifers, 7 heifer calves and 1 bull, was maintained in satisfactory condition throughout the year. The bull is purebred Friesian, the remainder being cross-bred Friesian X Damascus, Friesian X Beyrouth or Friesian X Baladi (local Arab). One strain of the Friesian X Damascus — the "*Gemala*" family — proved to be exceptionally good yielders both in quantity and quality, the butter fat content reaching 4 per cent. The total milk yield during the year was 57,663 litres giving an average of 4,118 litres per milking cow with a 4 per cent. butter fat content; the highest individual yield was 5,400 litres. Unfortunately a preponderance of male calves were born during the year, i.e. 7 male and only 2 female. One cow died from mastitis.

157. The flock of sheep, consisting of 57 Awasi ewes, 44 Awasi X Karakul ewes, 2 Awasi rams and a number of yearlings and lambs, was kept in satisfactory condition. The cross-breeding trials, to test the possibility of combining milk yielding qualities with pelt production, were continued into the second cross; experience to date shows the cross-bred ewes to be poor milk yielders compared with the pure Awasi. The total amount of milk produced was 2,500 litres. One hundred and eleven lambs were born during the year, 22 of which (cross-bred) were slaughtered soon after birth for pelt production.

158. 1,573 kilogrammes of butter and 4,835 kilogrammes of cheese of various kinds were produced in the dairy. After supplying the school kitchen with milk, butter and cheese, the surplus is sold through a Jewish marketing co-operative.

Poultry and Beekeeping.

159. The poultry section was maintained with a total of 427 laying hens, and a few turkeys, ducks and geese. The pure breeds kept were White Leghorn, Australorp, Light Sussex and New Hampshire. A certain amount of crossing was done for demonstration purposes. Some 54,550 eggs were laid during the year.

160. The school apiary consisted of 30 hives and yielded 400 kilogrammes of honey. Bees should do very well at Mount Tabor as wild flowers are prolific but for the bees' greatest enemy in Palestine — hornets. In this isolated area where no other apiaries exist it is extremely difficult to control hornets.

Revenue.

161. The total revenue collected by the sale of farm products amounted to £P. 2,578.052 mils, from school fees £P. 1,220.— and in addition the value of farm products to the school kitchen — £P. 1,745, must be taken into account.

Courses of Instruction.

162. Two courses of instruction were held at the School during the long vacation. One was for 30 Jewish rural school teachers who were given instruction in vegetable growing and soil management, lasting two weeks. The second course was for 30 Jewish farmers on soil conservation. Demonstrations in farm practices were given to a number of groups of British and Indian soldiers undergoing agricultural training in Palestine.

Non-Government Agricultural Schools.

163. For the Arabs the three principal institutions teaching agriculture are as follows :—

The Salesian Agricultural School at Beit Jimal which is part of the orphanage of the Salesian Fathers of Don Basco where Christian Arab boys between the ages of seven and sixteen are given theoretical and practical education in agriculture covering a period of three years, free of charge.

The Orphelinat Agricole at Latrun, which belongs to the Trappist Fathers, where a limited number of Christian boys from twelve to eighteen years of age are trained, free of charge, in practical agricultural for about six years.

The Deir 'Amr Agricultural School, which is situated about 15 kilometres west of Jerusalem, was established in 1941 for the education and training of Moslem orphans. The school has some 3,000 dunums of land of the type usual in the Judean hills, consisting of damaged valleys, steep eroded slopes and bare rounded hilltops. The Soil Conservation Board has interested itself in the development of this school and with the assistance of officers of the Department of Agriculture has given advice on soil conservation measures. Good progress has been made with terracing and contour planting of fruit and forest trees. Poultry are kept and boys are taught as many arts and crafts as facilities permit. They hope to acquire a couple of local cows to provide the school with milk. Free ranging goats and sheep have been excluded from the school lands and already there is a marked increase in the regeneration of trees and scrub.

164. On the Jewish side there are a number of schools providing education with an agricultural bias. The two most important institutions for vocational training in agriculture are :—

The Mikveh Israel (Alliance Israelite) Agricultural School.

This is the largest agricultural school in the country and has recently celebrated its 75th anniversary. The average number of students, both male and female, in residence during the year under review was 470. The course lasts for three years and students receive a general training in agriculture both theoretical and practical. The 2,000 dunum farm attached to the school is run on modern lines and has sections devoted to field crops, a large dairy herd, poultry, fruit orchards and a large vineyard. Much importance is attached to the botanical garden, which contains probably the most complete collection of plants and trees in the country.

The Pardess Hanna (Farmers' Association) Secondary Agricultural School.

This school, situated on the coastal road about half-way between Haifa and Tel Aviv, was established in 1934; it accepts pupils after full elementary education at the age of fourteen, the school course being of five years duration. There were 145 pupils, both boys and girls, in residence during the period under

review. The school has a well planned farm, the staff are well qualified, and a student completing the fifth year should be qualified to go out and earn a living as a practical farmer with a good agricultural education as a background.

165. Both the above-mentioned schools receive substantial assistance from Government.

166. There are a number of other Jewish agricultural schools which cater for the training of women and girls, the majority of these being run by the Women's International Zionist Organization (WIZO), and a large number of ordinary schools with gardens or orchards attached, in which pupils are taught botany and elementary horticulture.

School Gardens.

167. The Department of Agriculture continued to supply planting material, poultry and hatching eggs and bee swarms to school gardens with advice where necessary; the general supervision of Government school gardens being administered by the Department of Education who employ a Supervisor of School Gardens for this purpose.

Propaganda.

168. Particular attention has been paid to spreading knowledge on soil erosion and the urgent need for soil conservation. Weekly broadcasts have been given in Arabic and Hebrew. Those in Arabic were prepared by officers of the department on timely topics for farmers and met with good reception. Those in Hebrew were prepared and given by departmental officers as well as by experts on various subjects from Jewish agricultural schools, institutions and research stations.

SECTION III.

FINANCIAL STATEMENT.

Expenditure.

169. The expenditure of the Department in 1921, when it was first formed, was £P. 40,678. By 1938-39, when the last financial statement was published in the annual report, the expenditure had risen to £P. 178,201. In the year under review the expenditure was £P. 241,493. The rapid increase in expenditure during the war years was due to increased activities of the department in connection with food production and the ever-increasing costs of labour, materials and general costs of maintenance. The following table shows the expenditure on the principal services during the year under review. The heavy expenditure under Plant Protection (Special Expenditure — £P. 10,216) was on account of the cost of sending a locust unit to Saudi Arabia under the Middle East Anti-Locust Scheme. It should also be mentioned that the expenditure includes £P. 9,630 spent on the purchase of eggs and hatching of day-old chicks under a war-time poultry production scheme which is offset by a similar sum appearing under revenue for the sale of the day-old chicks.

EXPENDITURE INCURRED BY THE DEPARTMENT OF AGRICULTURE AND FISHERIES
DURING THE FINANCIAL YEAR 1945-46.

DESCRIPTION	Personal Emoluments	Other Charges	Special Expenditure	Total
	£P	£P	£P	£P
Administration (including clerical staff of all Services)	14,846	15,239	3,177	33,262
Agriculture.	15,383	18,308	787	34,478
Horticulture.	6,995	16,250	200	23,445
Fruit inspection.	4,345	15,563	—	19,908
Plant Protection.	5,590	4,975	10,216	20,781
Fisheries.	4,830	2,467	—	7,297
Government Farm, Acre.	2,916	18,441	—	21,357
Veterinary.	18,594	40,504	363	59,461
Expatriation, Stenography, Cost of Living and Housing Allowances.	4,412	—	—	4,412
Total	77,911	131,747	14,743	224,401
Kadoorie Agricultural School, Mt. Tabor.	3,126	13,539	427	17,092
GRAND TOTAL.	81,037	145,286	15,170	241,493

Revenue.

170. The revenue collected by the Department in 1921 was £P. 4,226 and had risen to £P. 83,193 in 1938-39. Revenue during the year under review was considerably less, namely £P. 57,091, but this is accounted for by the fact that in 1938-39 a sum of £P. 34,827 was collected in respect of citrus advertising fees, an item which disappeared the following year when citrus exports came to an end; thus the revenue in the year 1945-46 is actually £P. 8,725 more than in 1938-39. The principal sources of revenue for the year under review are shown in the following table :—

REVENUE COLLECTED BY THE DEPARTMENT OF AGRICULTURE AND FISHERIES
DURING THE FINANCIAL YEAR 1945-46.

DESCRIPTION	£P
Fishing Licences.	1,604
Fruit Inspection Fees.	8,829
Plant Fumigation Fees.	446
Poultry Station Receipts.	18,579
Sale of Departmental Stores.	1,396
Sale of Nursery Produce.	4,492
Sale of Livestock.	4,814
Veterinary Receipts (Animal Quarantine Fees, etc.)	12,573
Field Mice Campaign. (Sale of Poisoned Grain to Farmers)	566
	53,299
Kadoorie Agricultural School, Mt. Tabor. (Fees).	1,220
Kadoorie Agricultural School, Mt. Tabor. (Farm Receipts.)	2,572
GRAND TOTAL.	57,091

SECTION IV.

LEGISLATION.

171. One important Ordinance of interest to farmers was enacted during the year under review, namely, the Animal Diseases Ordinance, 1945. This Ordinance replaces one of a similar nature enacted nearly twenty years ago. The considerable development of the livestock and poultry industries and the greatly increased imports of food and other animals made it increasingly clear with the passage of time that the legislation in force was quite inadequate. In the new Ordinance a very large number of the provisions of the original legislation were re-cast and a certain number of new provisions inserted. Some of the important changes are :— The re-modelling and amplification of certain definitions, provision for the more immediate application of control measures in times of sudden emergency, provision to enable the High Commissioner to fix and vary the maximum amounts payable as compensation for animals compulsorily destroyed, delegation of greater powers to the head of the Veterinary Service and an increase in the maximum penalties to which offenders were previously liable.

172. As in the five preceding years a Citrus Crop Loans (Government Guarantee) Ordinance was enacted in the year under review to assist citrus growers to obtain loans on the security of the citrus crop of the 1945-46 season.

173. A large number of rules were made and promulgated during the year under the Animal Diseases Ordinance, chiefly restricting the importation of animals from certain countries.

174. A minor amendment to rules under the Fisheries Ordinance was made to re-introduce the regulation prohibiting trawl fishing within Palestine territorial waters which was relaxed as a war-time expediency.

175. Rules were made under the Plant Protection Ordinance enabling the Director of Agriculture to prohibit or regulate the planting or cultivation of certain cereals on specified lands in order to control the leaf miner (*Syringopais temperatella*), a serious pest of wheat.

Jerusalem,

21st. March, 1947.

F. R. MASON

*Director of Agriculture
and Fisheries*

